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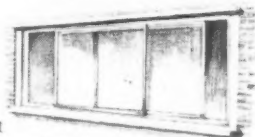
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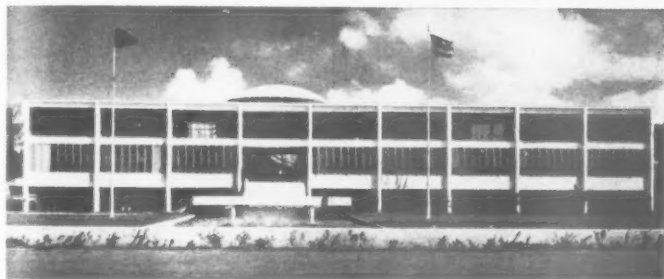
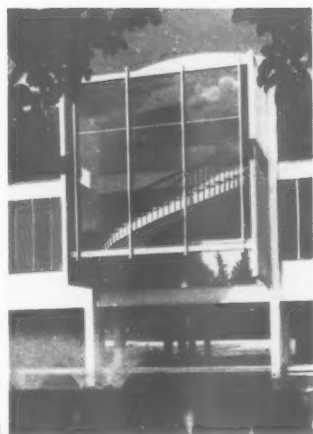
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MARGINALIA

The New Classicism in Puerto Rico

Clearly Johnsonian in its inspiration, the new Supreme Court building in San Juan, Puerto Rico, 1, is also a most distinguished new-comer to the ranks of well-designed government buildings in the tropics. The planning of the block is bi-axially symmetrical in sense, if not in every minute particular, and the domical court-room occurs on the upper floor at the point where the two axes intersect. The cross-axis not only passes through the centres of the entrance on one side of the block, and the stairs on the other, but also gives the line of the formal pool that passes clean under the block, and over which the staircase is cantilevered, 2. Since the pool and the entrance are co-axial, it is impossible to approach the entrance directly, and the visitor's route enters the building along



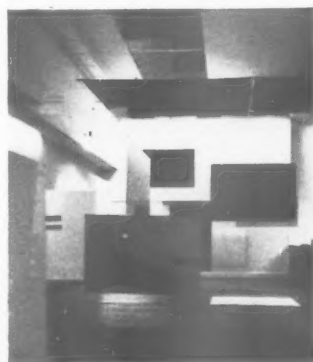
the side, mounting to a bridge-platform over the pool, and thence up a flight of steps on the entrance axis. The architects, Toro-Ferrer and Charles H. Warner, Jr., are to be congratulated on the way that they have employed classical disciplines to give a formality proper to the building's function without becoming the slaves of their axes.

An Exhibit

An instructive exercise in two-level aesthetic effect and three-level aesthetic intention was provided by *An Exhibit*, a demountable complex of planes in space, shown at the Hatton Gallery in Newcastle in July, and at the Institute of Contemporary Arts, London, in August. The basic construction of suspended Perspex sheets could be regarded, under ideal circumstances, 3, as simply a gratifyingly large Constructivist art-work of a routine rectilinear kind. But the devisors of *An Exhibit*, Richard Hamilton, Victor Pasmore and Lawrence Alloway, intended at least two further levels of significance beyond this. Viewed under non-ideal conditions by a visitor circulating among the panels, it became a kind of visual maze of reflections, varying degrees of transparency, and other visitors seen partly obscured or unexpectedly revealed, 4. The visitor could thus 'play' *An Exhibit* for accidental effects that had never been within the devisors' control. But in the third level of aesthetic intention, the devisors had played a private game of their own, the finite number of standard panels on a standard grid providing the limiting terms within which the 'antagonistic

the new Classicism in Puerto Rico

an exhibit



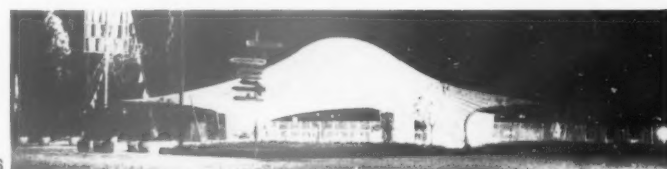
co-operation' of deciding the layout could, at any stage, have been evaluated by the Theory of Games. Yet the final form of *An Exhibit* was so neutral that this particular game was lost to the visitor, to whom it gave far less information than might be deduced, for instance, by picking up the cards after a hand at whist.

Germany Under Canvas

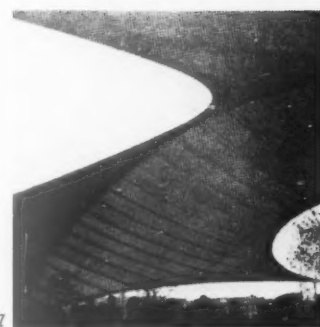
Roof-structures in tension being the 'latest thing,' there is a fine historical irony in the fact that the most interesting recent experiments on this theme should be concerned with the oldest tension structure known to man—the tent. No exhibition nowadays in Federal Germany is complete—it would seem—without its quota of *Zeltkonstruktionen*, and the results are a live contribution to the architecture of pleasure and display. The Zelt-Café at the Berlin *Interbau* exhibition—a sort of paradise garden under demountable hyperbolic paraboloids—will doubtless be seen and admired by many visitors this year, 5, but the same



design team of Frei Otto, Ewald Bubner, Dieter Frank and Siegfried Lohs, have achieved even more remarkable results at Cologne, for the garden exhibition. The main entrance is canopied by a large single spread tensioned at four points over a steel arch that forms the ridge, 6 and



7—a feat of engineering that required the technical assistance of the engineer Fritz Leonhardt, designer of the Stuttgart TV tower (AR, September, 1957)—and, as will be seen, its translucency has been fully capitalised for night-time effects. Of the three other tents contributed by this team to the same exhibition,



the gayest is undoubtedly the star-form one over the dance floor, seen again by night in 8, which is indeed, as Bauwelt observed (issue of July 29, 1957), a *Provokateur festlicher Stimmung*.



Tea-House on Route Seventeen

Designed in part by Junzo Yoshimura, the architect of the Japanese house exhibited at the Museum of Modern Art, New York, some three years ago, the restaurant of the *Motel On the Mountain* at Suffern, NY, is one of the largest testimonies of US interest in Japanese architecture to appear so far. Japanese in idiom and detailing, rather than in planning conception, the restaurant and its balconies, 9, command views of wooded mountain scenery and, more remotely, of the New

York Thruway and the subtopia of New Jersey Route 17, being connected to the latter by a winding road down the hill-side. The whole scheme, motel and restaurant together, has aroused wider-than-professional interest, and *Life* magazine supported a description of it with a brief note on the history of the Japanese influence on US architecture, illustrated by examples of the work of Greene and Greene, Frank Lloyd Wright, Richard Neutra, Harwell Harris and Gordon Drake.

[Note: illustration 9 appears overleaf.]

CORRESPONDENCE

Crystal Palace Garden

To the Editors,

Sirs,—I would like to appeal for support to prevent the destruction of the Paxton garden at the Crystal Palace. As I see it there are four good reasons for keeping the garden and none at all for breaking it up.

1. It is a living monument to a great man, Paxton, who designed it,

tea house on route seventeen

9, the Japanese-inspired restaurant of the Motel on the Mountain, at Suffern, New York. (See note on previous page.)

and to a tremendous period in our history. These huge terraces and their extraordinary sculpture are as significant of their time as Stonehenge, and equally worthy of preservation.

2. It is an open space on a superb steep hilltop site, accessible by bus from all parts of London.

3. It is a formal garden, unique in Europe, extravagantly laid out in the grand manner of previous centuries.

4. Lastly, but most important, it has been closed for 20 years and has become a lush jungle; it could become a magnificent wilderness garden for the children of London.

The site of the Crystal Palace—said to cover 200 acres—was bought by public subscription in 1914 to save it from being built on. This included the Palace, these gardens, and a lot of the hillside below them. In 1954 the LCC commissioned Sir Gerald Barry to produce a plan for 'developing' the site, the Council having taken it over. This scheme includes an exhibition centre on the top of the hill where the Crystal Palace stood, a National Youth and Sports Centre at the bottom of the hill, and excavation of what looks like the whole of the terraced part for garages, car parks and administration buildings. The £7,000,000 required for this enterprise is admittedly nowhere in sight, nor is there a guarantor for the estimated annual deficit of £70,000 and at a press conference in 1955 the Parks Department announced that it would welcome suggestions for interim uses of the terrain.

Recently, however, the LCC started to auction off the sculpture, to dismantle and 'improve' the gardens. At this stage I started action to prevent this piece of vandalism. Although it was the end of July and many people and public bodies were out of action for the month of August, I had favourable and sympathetic replies to letters and to a couple of articles published by South London papers, and it seems that destruction has been postponed.

It is now urgently necessary to form a committee to treat with the LCC in the matter of taking over the gardens and preserving them for use by children with as few restrictions as possible. One of the terraces might be used exclusively for very small children, accompanied by a parent; and perhaps one or two of the present fountains overgrown with water lilies and bulrushes could be

reconditioned, so that a child could set them off. Many other ideas would doubtless occur to committee members.

London children have all too little experience of wide open spaces to work off growing energy, and very little scope for using their imagination or for exercising their creative—as well as destructive—urges. This garden provides all this with its dramatic stairways, colonnades, fanciful statues peeping out of thickets, high jungle grass, pickable unsmarm flowers, and hilltop fresh air, and I submit that it would be an act of vandalism to 'improve' or remove it. If the garden, covering I suppose about 16 acres, were used for this purpose it would need less expense on reconditioning than any other scheme now being considered. I very much hope it can be saved.

Yours, etc.,

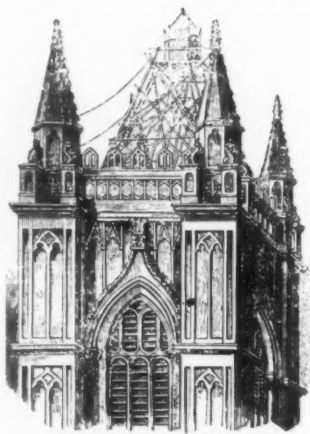
JOAN HIGGINS.

London, W.1.

"Crow's Nest" on the Abbey

To the Editors,

SIRS.—When the Ordnance Survey of London was in progress one of the towers of Westminster Abbey had a surveyor's 'crow's nest,' or signal and theodolite station erected under the direction of Colour-Sergeant Smith, of the Sappers and Miners, which towered above its pinnacles. The old engraving dated April 22, 1848, depicts this curious structure on which the red-coated gentry perched like crows in their surveying operations. Captain Yolland, R.E., designed the structure and the actual work of sparring and bolting and lashing was done by sappers working under Corporal Beaton. In the instrument tent on top the great theodolite, which weighed 2 cwt., was used in the triangulation. During a thunderstorm the officer in charge of the instrument witnessed a blinding flash, as if the structure had been



struck by lightning but no damage was observed. Similar 'crow's nests' were erected on the cross of St. Paul's Cathedral, St. Luke's and other church towers of London in the great chain of trigonometrical points which meshed the lines of far-flung bricks and mortar. So, the Abbey had its new look away back in 1848.

Yours, etc.,

COLIN JOHNSTON ROBB.
Ballynahinch, Co. Down, Ireland.

Glass Skyscrapers

To the Editors,

SIRS.—In THE ARCHITECTURAL REVIEW, Volume 121, 1957, page 305, a project by Mies van der Rohe for a glass skyscraper is illustrated as an early example of curtain walling. The date printed with it was 1926.

This may well be a misprint for 1920; for Mies van der Rohe's thoughts on point blocks and glass walls go back to 1920 or even 1919, as witnessed by the illustrations in Philip Johnson's book (New York 1953), page 25. Another German pioneer of the glass skyscraper was Ludwig Hilberseimer and as his early designs are so much less familiar I wrote to him for some precise information. I received an answer which I think deserves quoting in full. This is what he says:

"Some sketches to different projects of the 'twenties to my mind in relation to your question."

"The project for the Chicago Tribune, 1922. A concrete and glass building 25 floors high. Beams and



Part of Professor Hilberseimer's letter referred to in the letter 'Glass Skyscrapers'. The sketches represent, from top to bottom, the Chicago Tribune; the Tempelhofer Feld housing projects, Berlin; Hallesches Tor office building, Berlin; and the Central Station, Berlin.

columns are exposed and an equal architectural element.

"Housing projects Tempelhofer Feld Berlin, 1924. An office building is included ten floors high, a concrete and glass building. The columns are set back, the spandrel walls under the windows are an extension of the floor slabs turned at right angles.

"Office building Hallesches Tor Berlin, 1927, also in connection with a housing project. In the axis of the Friedrichstrasse. Concrete and glass, same structure(?) as the Tempelhof building. Horizontal bands alternate. One contains span arches the other windows. There is also a sketch for the Central Station in Berlin, 1926, a steel and glass building with only glass for curtain walls. The east-west lines are elevated and the north-south lines are below ground."

The design for the Chicago Tribune was illustrated in various places, e.g., I think, Hilberseimer *Grossstadt-bauten*, Hanover, 1925. The scheme for the Tempelhofer Feld appears in B. Taut, *Die Neue Baukunst*, Stuttgart, 1929, page 151, the office building near the Hallesches Tor in *Moderne Bauformen*, 1928, page 347, the Central Station for Berlin in Hilberseimer, *Grossstadtarchitektur*, Stuttgart, 1927, page 82.

Yours, etc.,

NIKOLAUS PEVNER.

CORRECTIONS

We regret that in the second part of the article on *Universities* in last month's AR (pages 240-251) no mention was made of Miss Elizabeth Beasley's co-authorship with Lionel Brett. Development plans for Cambridge and Birmingham Universities illustrated in the October issue were the work of Sir Hugh M. Casson and Mr. Neville Condon and not of Sir Hugh M. Casson alone.

INTELLIGENCE

There will be an international competition in two stages for a new city hall and square for Toronto. At the end of the first stage, eight competitors will be selected to compete in the second stage, at the end of which each will be paid \$7,500. The winner will be the architect for the building and will receive \$25,000 in advance of fees. Competition conditions can be obtained from Professor Eric Arthur c/o City Hall, Toronto, Canada, for a fee of \$5 or its equivalent.

ACKNOWLEDGMENTS

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COVER: William Whitfield, *MARGINALIA*, pages 293-294; 3, 4, Sam Lambert, *BEAUTIFUL AND IF NEED BE USEFUL*, pages 295-297; 2, Foto Mas, Barcelona; 3, William Morris Gallery; 4, from John Szarkowski's *The Ideas of Louis Sullivan*, University of Minnesota Press, USA, and OUP, England; 5, William Morris Gallery; 6, Eric de Maré, *PAPER MILL AT NORTHFLEET*, pages 300-309; 19, Holland, Hanneb; and Cubitts; rest, Galwey, Arphot. THE GEORGIAN BREWERY, pages 310-321; 1, 9, 10, Watney, Combe Reid and Co.; 2, Bristol Brewery Georges and Co.; 3-6, 8, 45, Whitbread and Co.; 7, Birmingham Public Libraries; 11, British Museum; 12, 54, Guildhall Library; 13, 14, Sir John Soane's Museum; 15, 32, Richards, Arphot; 16, 17, Eric de Maré; 18, 19, 25, London County Council; 20-22, Burton-on-Trent Public Library; 23, 24, 46, Arthur Guinness, Son and Co.; 26, 27, Truman Hanbury Buxton and Co.; 28, 31, 33-43, 48, Courage and Barclay Ltd. (photographs 33-43 by Herbert K. Nolan); 29, 44, Whitwell Mark and Co.; 30, N.B.R.; 47, Bass Ratcliff and Gretton; 49, 53, Benskin's Watford Brewery Ltd.; 50, *A Monthly Bulletin*; 51, H. and G. Simonds Ltd.; 52, Ind Coope and Allsopp Ltd. UNIVERSITY and POLYTECHNIC, RANGOON, pages 323-332: Ray Lancaster, Hugh Powell Thomas, David Charnley and others. CURRENT ARCHITECTURE, pages 337-340: School at Sheffield, Colin Westwood; Administration Building at Shell Haven, Sydney W. Newbery; Pub at Peckham Rye, Colin Westwood. MISCELLANY, pages 341-348: Architecture, St. John's (after) J. R. Pantlin; Maggie House (before) Christopher Goteh; (after) Colin Westwood. Exhibitions, 1, 2, Scottish Tourist Board; 3, Millar & Harris. Counter-Attack, Andor Gomme and Nairn, Arphot. SKILL, pages 349-end: Interiors, 1, 7, Millar & Harris; rest, Galwey. Design Review, light fittings, Peter Pitt. Techniques, 12, Philip Turner; 13, Colliers Ltd.

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THE ARCHITECTURAL REVIEW

Volume 122 Number 730 November 1957



This Month's Cover is a view from the first-floor gallery of the Engineering Block of the new Rangoon university buildings, toward the geometrically patterned screen wall of the Library. Throughout this scheme the architects, Raglan Squire and Partners, have made the most enterprising use of colour, in opposition to the received opinion that only white and shadow will succeed in strong tropical sunlight, and the measure of their success can be seen in the coloured illustrations that accompany the description of the buildings on pages 323-332.

293 Marginalia

293 Correspondence

296 Frontispiece

297 Beautiful and if need be Useful by Nikolaus Pevsner Only recently delivered from contempt and oblivion, after almost thirty years of exploratory and pioneering studies, Art Nouveau can now be regarded as an established historical style. Yet Dr. Tschudi Madsen, whose new book on the *Sources of Art Nouveau* marks its establishment, doubts that it really merits the appellation of a style because, he claims, it never achieved any hegemony over architecture, but remained primarily a fashion in decoration. Since this implies a re-appraisal of the work of Gaudí, Horta and Sullivan, among other architects of the late nineteenth century, Professor Pevsner examines the limitations on the use of the term Art Nouveau as Dr. Madsen employs it; limitations in extent, and also limitations in time, since Dr. Madsen also raises the problem of Mackmurdo—is he a source or a pioneer of the style? Attempts to set limits to Art Nouveau also involve attempts to define its central characteristics, and this last is rendered more than usually difficult by the contradictions between theory and practice, and between the ideas of one theorist and the next; contradictions whose depth and extent

are made more evident than ever by the mass of material that Dr. Madsen has brought together.

300 Paper Mill Extensions, Northfleet Architects, Farmer and Dark

310 The Georgian Brewery by Brian Spiller Georgian Breweries are one of the largest classes of Functional Tradition buildings to be found in Britain, but they are still perishable, and their numbers are dwindling. Yet they were once one of the wonders of Europe, early masterpieces of planning for flow-production, early among industries to be mechanized and steam-powered. Mr. Spiller's study relates the buildings to the sudden expansion of business of the leading London brewers in the mid-eighteenth century, the organizational changes involved in conversion from domestic to factory operation, and the new techniques such as gravity feed and steam power that followed one another toward the century's end. Although, toward the end of this phase, there were architects who might be called brewery-specialists, and men of the status of the elder Gwilt were retained by Thrane as surveyors, the designers of the buildings—Mylne alone excepted—were less conspicuous in their profession than were the engineering consultants—Smeaton, Wedgwood, Boulton and Watt, Rennie—who were involved not only in the installation of power-plant, but also in the rationalization of storage, as exemplified in the change-over from barrels to rectangular cisterns. It was a phase of industrial transition when function was more to be considered than architectural show, but also a phase when purely functional equipment could excite an aesthetic admiration, as when a visitor to the Anchor Brewery, Southwark, found even a kind of elegance in the cooper's work on the vats there—an elegance that can still be admired in the surviving buildings of the period, even when their interior appurtenances have been altered out of all recognition.

323 University and Polytechnic, Rangoon Architects, Raglan Squire and Partners

333 Cluster City by Alison and Peter Smithson Modern architects can scarcely fail to be aware that every building they design has its consequences for the community and the culture in which it is situated, and the pioneers of functionalist architecture saw the precepts of their building practice as extensible into functionalist cities and even functionalist regional planning. But nowadays it is widely felt that their functional-mechanical concept of town planning is no longer relevant, and the cartesian geometry of Le Corbusier's Ville Radieuse of the Twenties, though it once

supported a vital image of how a city should be, now appears as a crushingly banal exercise in pattern-making. The authors suggest that our main concern now is with flow, rather than measure; flow, in the case of motor-traffic, into, out of, around, between areas of maximum population pressure, clusters of buildings whose varying homogeneities and contrasts will create a new image of a city, a new hierarchy of forms. But, unlike the classical formal hierarchies, which are finite and closed, the new one should be capable of growth, yet capable of being understood at every stage of its growth; unlike the classical pyramid of densities, tapering from central excess to peripheral vagueness, the new one should consist of a number of peaks of population pressure, not density statistics, disposed according to the nature and growth of the place.

337 Current Architecture

Miscellany

341 Books

341 Highway Code

344 History

344 Architecture

345 Exhibition

347 Counter Attack

Skill

349 Interiors: Store at Guildford Architects, G. A. Jellicoe and Partners

351 Design Review: Prototype Railway Carriage Architects, Farmer and Dark

352 Design Review: Light Fittings

353 Techniques: the Building Exhibition by John and Ann Voelcker The biennial Building Exhibition this month brings new and improved materials, techniques and equipment to the notice of the architectural profession. Mr. Voelcker's pre-view draws attention to some of the outstanding innovations and improvements, and describes and illustrates them.

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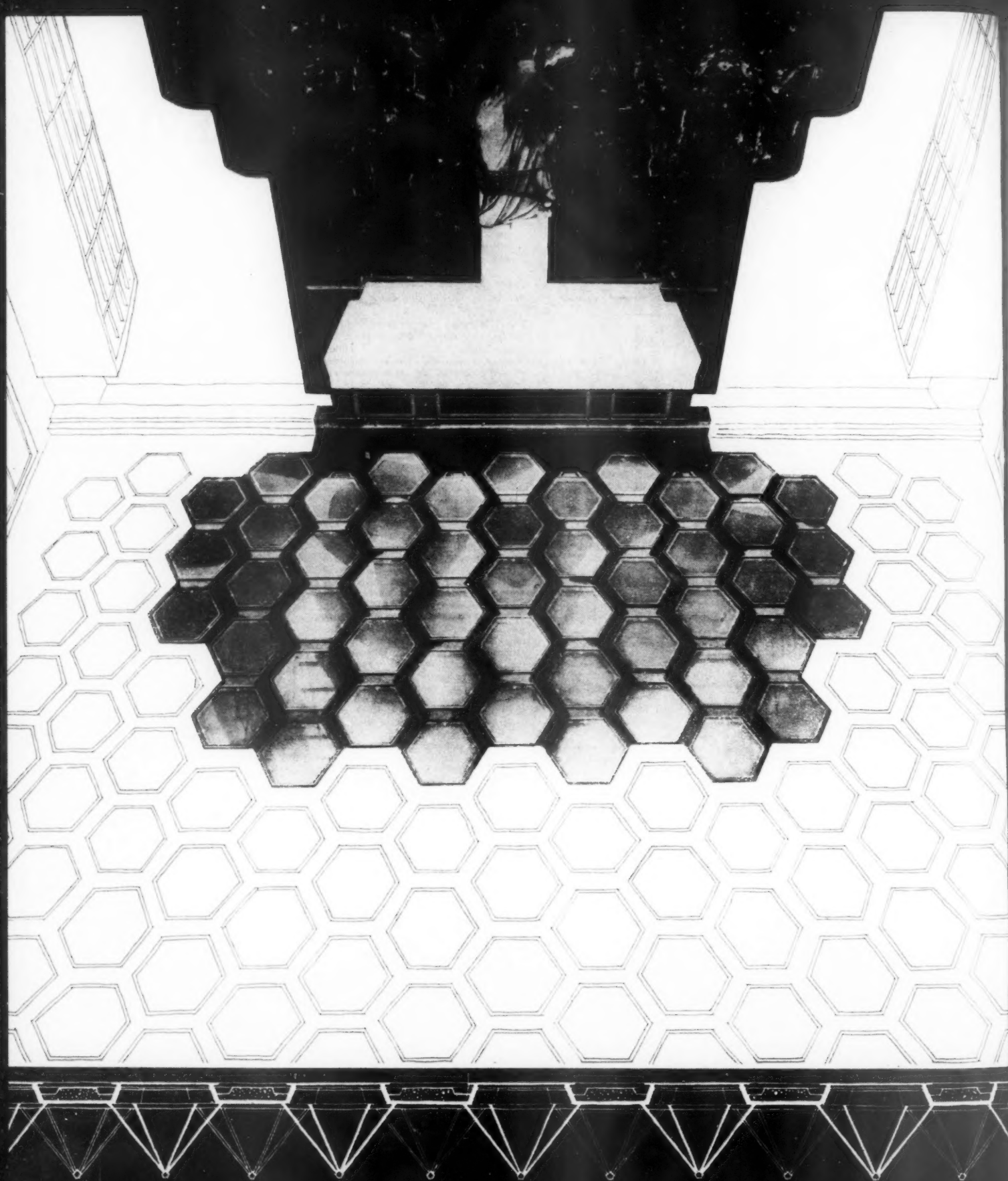
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THE ARCHITECTURAL REVIEW

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FIVE SHILLINGS



The Trades Union Congress Memorial Building, Great Russell Street, is only the second major public building erected in London since the War. Unlike the first—the Royal Festival Hall—the site cannot show its exterior to great advantage; hence visual interest is concentrated on its inner court. Kenneth Browne's montage above looks along the main axis towards the screen wall and the shrouded Epstein sculpture. The honeycomb pattern is given by the hexagonal roof-lights that illuminate the Congress Hall, which are supported on the complex trusses shown in section. Next month's AR will give further illustrations of these features and the first full description of the completed building.

BEAUTIFUL AND IF NEED BE USEFUL.

'I believe in everything being beautiful, pleasant, and if need be, useful.'

Jessie Newbery, 1898.

When does a style or a fashion become history? Not, of course, as long as it is operative. Nor immediately after it has been superseded. This is the moment when it becomes out of date or outmoded. Something between one and two generations, thirty and sixty years, seems to be needed. In the case of Art Nouveau which is the case to be considered in this essay, the first to look at it as a historian was Ernst Michalski in a paper published in 1925. This was followed by a lecture given by the painter Ahlers-Hestermann in 1932 and an article by Dolf Sternberger in 1934.¹ After that came Fritz Schmalenbach's book on *Jugendstil* of 1935 and my *Pioneers* of 1936. All these were themselves pioneer efforts with some of the shortcomings of such efforts. Dr. Tschudi Madsen's new book² has well over 480 pages. It contains more material than has ever before been got together, plenty of illustrations of which many are nearly unknown and a bibliography of about 600 items.

That seems proof that Art Nouveau has now made the grade and is accepted as a full-dress style. Curiously enough Mr. Madsen does not think so. So the case must be investigated. What constitutes a style as against a fashion? I would say that we speak of a style as against a fashion, where an essential new statement is made, where all (or most) fields of aesthetic creation are concerned, and where duration is more than a couple of years. In the case of Art Nouveau duration is no more than a maximum of ten or twelve years and in some cases indeed only four or five. So this criterion is of doubtful application. And as regards all fields of aesthetic creation, parallels with painting are obvious, with literature and music

they are also unquestionable—symbolism being the connecting link—but architecture? Here Mr. Madsen is explicit. 'Art Nouveau is essentially a European style of decoration . . . never really extending its hegemony to architecture' (pages 430-431). Therefore it 'constituted an interlude and was not a style' (page 443). The validity of this interpretation hinges on Gaudí. Mr. Madsen banishes him into a few paragraphs at the end of two of his chapters on the sources of Art Nouveau: the Gothic Revival and Neo-Baroque. But what if not Art Nouveau are such decorative details as those of the Palau Güell of 1885-1889, 2? And if that is admitted, can the architecture of the Colonia Güell begun in 1898 and the Parque Güell begun in 1900 be called anything other than Art Nouveau? Mr. Madsen defines the characteristics of Art Nouveau exceedingly well: 'Its main feature is an unusual emphasis upon the ornamental value of the line, a line of undulating movement and rhythmic force, often enhanced by a counter movement filled with tension. Art Nouveau is asymmetrical in nature, as is evident in the tiniest movement of a single line as well as in the composition of an actual ornament.'

Surely all this fits Gaudí to perfection. What singles him out is his bold working in depth and in addition a robustness and sometimes savagery alien to the fin de siècle languor of the other leaders. If Gaudí is accepted within the totality of Art Nouveau, the style does not only increase in stature, it also gains in time. For to Mr. Madsen as indeed to most others it begins with Horta's house in the former rue de Turin, now rue Paul-Ernest Janson, designed in 1892. He treats Mackmurdo's work of the years 1893-1896 under the heading 'English Proto-Art Nouveau' which, on the pattern of the Tuscan Proto-Renaissance in the eleventh and twelfth centuries surely means something not Art Nouveau, though heralding it. But Mackmurdo is Art Nouveau, I. I hoped to have established that, and, if I have not, Mr. Schmutzler surely has. To Mackmurdo's immediate sources Mr. Madsen incidentally makes a very convincing contribution in illustrating a Burne-Jones pastel of 1881, 5. To this I may perhaps add a detail from William Burges's house in Melbury Road, that

is of c. 1875-1880, 3. To Mackmurdo we must add Sullivan of whom Mr. Madsen says that he does 'not fall within the framework of what we might call Art Nouveau' (page 442). His ornament again can be analyzed in exactly the terms of Mr. Madsen's analysis of Art Nouveau, and so the *incunabula* of Art Nouveau date from 1883, 1885-1889, 1888. The date of the Auditorium is 1888, 4.

But with Sullivan we are up against an added complication. His structural expression appears to contradict his ornament. That seems to justify Mr. Madsen in his exclusion. Yet, is one entitled to split up a personality into an Art Nouveau and a Modern Movement part? The temptation is great. In a comparable though somewhat different way Mr. Howarth has fallen into it in his assessment of Mackintosh, and Mr. Madsen follows Mr. Howarth. He calls Mackintosh's style—a highly sophisticated version of international Art Nouveau' (page 437) but explicitly denies that he introduced that style into his architecture (page 37), thereby again splitting up a personality of embracing one-ness. No—the asymmetrical blocks of Mackintosh, the placing of the windows and oriels, the contrasts of rigid verticals and delicate curves belong together. Once that is admitted, then Art Nouveau architecture can without effort be extended to include Scholkopf's crazy house for Yvette Guilbert and much of the (later) Italian *Stile Liberty* or *Floreal* on the one hand, Endell's combination of large flowing ornament and precise rectangularity in architectural design on the other.

An ambiguity remains, but it is the ambiguity of the moment of transition. Mr. Madsen whose chief concern is the sources of the style sees its links with the nineteenth century more strongly than its perspectives into the twentieth. He says very well: 'All of a sudden a new style was there—like a new shining Sunday suit, newly arrived from Brussels or Paris. But it was a suit that proved impossible to work in on a weekday . . . It failed to solve the common problems which new materials and social tasks posed.' Moreover it remained 'to a large extent the style of the individual artist, demanding manual skill. . . . Nothing, in fact,

produced in the Art Nouveau style, could be manufactured. Art Nouveau represents . . . the nineteenth century's final reaction against the machine and its aesthetic norms' (pages 443-445). Against this he sets with perfect fairness the new feeling for unity in interior decoration, indeed a crucial innovation—even if anticipated by William Morris—the replacement of darkness by light, the total break with period motifs—this alone an achievement which establishes Art Nouveau as a style and not a fashion—and finally 'the interest in structure as expression.'

Here Mr. Madsen touches on something of the utmost importance. But when one tries to track it down in Art Nouveau theory one is faced with a confusion which even Mr. Madsen can only register and not solve. If there is ambiguity in Art Nouveau architecture, there is outright contradiction in Art Nouveau theory. Mr. Madsen starts with Gallé and the School of Nancy. Above the entrance to Gallé's studio one read: 'Nos racines sont au fond des bois,' and, indeed, his faith in natural forms comes close to that of many of the designers and craftsmen of 1851. But others meant something quite different when they praised and recommended nature. The muddle goes back through centuries. Natural can mean harmony with the rational rules of the universe or it can mean the elementary (this is the familiar contradiction in Alexander Pope's and Kent's semi-rationalist, semi-picturesque theories and works), it can mean true (*The Germ*, the pre-Raphaelite journal, called itself *Thoughts towards Nature* in . . . Art) or in praise of God (Ruskin: 'all noble ornamentation is the expression of man's delight in God's work. . . . All most lovely forms and thoughts are directly taken from natural objects.') So, while Gallé voted for the copying of forms from nature, Jean Dampé of the Nancy school recommends a 'nature épurée, affinée, synthétisée,' and Voysey wrote that nature must not be imitated but that 'the natural forms have to be reduced to symbols . . . through an elaborate process of selection.' That is based on Mackmurdo, who in an article called *Nature in Ornament*, said that by such treatment of the raw materials of nature ornament would be produced

¹ These two facts come from Ahlers-Hestermann's book *Stilwende* which was first published in 1941 and of which a second revised edition has just appeared. It contains a new introduction to bring it up to date and revisions of several chapters as well. Ahlers-Hestermann among recent events refers to two exhibitions held in Germany and apparently not commented on in this country, one at Hamburg in 1950 and one at Frankfurt in 1955.

² *Sources of Art Nouveau*, Aschehoug, Oslo, 1956.

which is in 'strict conformity with all organic structure.' Van de Velde, of course, was more radical: 'La moindre faiblesse sentimentale, la moindre association naturaliste menacent l'éternité de cet ornement.' So nature has become the principle of all organic growth—that is fitness, and we stand insecurely between Pugin and Frank Lloyd Wright. Christopher Dresser wrote in 1862 that 'in vegetable nature the utmost regard to fitness is manifested.' Indeed the contact between naturalism as the imitation of vegetable form and the exploitation of the principles of natural growth is as typical of the theory of 1850–1860 (Cole, Owen Jones, M. D. Wyatt) as of 1890. The emphasis on fitness in the theoretical sayings of so many of Mr. Madsen's artists innocent of fitness in their art is startling: Gallé decrees that furniture must be 'fait pour servir' and have a 'saine construction . . . bien évidente,' Grasset recommends to 'consulter l'usage présent, l'utilité des objets' and 'la matière employée,' Gaillard does the same (page 372); so does the manifesto of *L'Art dans Tout*. Thus the contradiction between van de Velde's preaching and doing which has baffled many is no longer a solitary case. He may well say—and says well—that ornament should 'structurer' (page 187), but it does not in his finest pieces. Mr. Madsen sees this contradiction clearly (page 325).

There is, indeed, little he does not see. Even in English affairs, he sees sometimes what we in England had not seen before. Thus his analysis of Alfred Gilbert is much to the point. Gilbert's treatment of metal is the direct link from Victorian neo-Baroque to Art Nouveau, 6. Of the *épergne* which Gilbert made for Queen Victoria's Jubilee in 1887, Mr. Madsen writes: 'The figures stand heroically unmoved in the midst of serpents, hissing lizards, snorting monsters, and sprawling fish, symbolizing the unity of the British Empire.'

No English writer could improve

on this, and it remains altogether admirable how easily Mr. Madsen's English flows. What there is of occasional impurities of style or linguistic mistakes is of no importance. And while in the case of Gilbert what is new is a matter of interpretation, there is in another place a completely new English story, both significant and entertaining. On June 28, 1900, Mr. George Donaldson offered the Victoria and Albert Museum a gift of several thousand pounds to purchase some of 'the best models of the style called New Art' and place them before the public, 'however much this New Art may conflict with our Classical standards.' The gifts were accepted and made accessible early in 1901. No sooner had this happened than a letter appeared in *The Times* as follows:—

'Sir,—It is much to be regretted that the authorities of South Kensington have introduced into the Museum specimens of the work styled "l'Art Nouveau."

'This work is neither right in principle nor does it evince a proper regard for the material employed. As cabinet maker's work it is badly executed. It represents only a trick of design which, developed from debased forms, has prejudicially affected the design of furniture and buildings in neighbouring countries.

'In its present position, it is in danger of being looked upon as a recognized model which has received the approval of the authorities for study by students and designers, and the harm it may thus produce on our national art cannot be easily gauged.

'We, the undersigned, desire publicly to protest against its importation at South Kensington, and most strongly against its recommendation by the authorities to the notice of furniture makers and others.

'We are, Sir, Yours faithfully,
John Belcher, A.R.A.
Reginald Blomfield.
Mervyn Macartney.
Edward S. Prior.'

The letter is wonderfully telling.

Three of the four signatories, Belcher, Blomfield and Macartney, were on the classical side and hence automatically hostile to Art Nouveau, but the fourth, Prior, had certainly designed enough fantastical details to be credited with more sympathy. Moreover, Blomfield, Macartney and Prior came from the Morris-Shaw circle and so had plenty of ties with the group from which Art Nouveau arose. Their condemnation is thus a voice of the future as well as the past. The Board of Education followed with an internal memorandum warning against 'a style not consistent with the teaching at Art Schools of the United Kingdom.' In that there was nothing of the future. We know the tone from the 1930's.

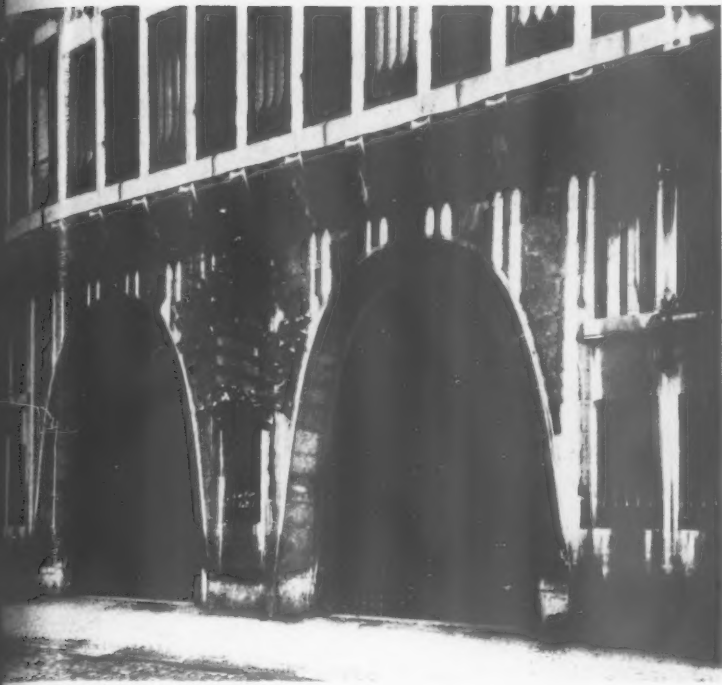
Yet—and this is equally telling—how well-mannered it all is, even Sir Reginald Blomfield who lived long enough to combat the next *Modernism*; even Sir Albert Richardson today, if we compare his attacks with another outbreak of hostility against Art Nouveau, a French one, Arsène Alexandre's article in *Le Figaro* of 1895: 'Tout cela sent l'Anglais vicieux, la Juive morphinomane ou le Belge roubard, ou une agréable salade de ces trois poisons.' If by now the salad has indeed become agreeable, if Mr. Madsen's turns out to be an enjoyable as well as a scholarly book, is that perhaps due to the fact that his choice of subject is not so entirely a matter of historical detachment at last having been reached, but rather a matter of a new involvement? The rationalists of 1930 were bound to be disgusted with a style or a fashion in which beauty was placed so shamelessly before use. Ronchamp and the roof-scape of the Unité and all the structural acrobatics of today in which concrete is used as fancifully as iron was by Art Nouveau may well lead to a more sympathetic evaluation of the events of the ending nineteenth century. If that is so, then Mr. Madsen finds himself in illustrious even if somewhat dubious company.

The Sources of Art Nouveau:

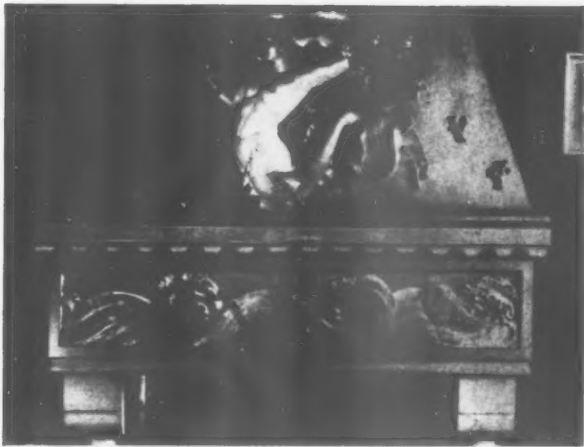
Tschudi Madsen's new book *Sources of Art Nouveau* raises an important problem that is the necessary concomitant to any enquiry into origins—what are the limits of the style, in time, in intention, and in the type of art-work to be considered? Professor Pevsner raises this question in connexion with Mackmurdo: does his work, 1, stand within the canon of Art Nouveau, or does it belong to the preliminary half-world, called 'proto-Art Nouveau' by Madsen, between the style proper and Mackmurdo's own sources in Burne-Jones, 5, and Burges, 3. This is a problem of where to draw the line in time, but since Madsen is unwilling to accept Art Nouveau as any more than a fashion in decoration, rather than a style of building, then problems of architecture, as well as time, intrude. If Antoni Gaudí's *Palau Güell*, 2, can be accepted—against the Madsen thesis—as Art Nouveau, then the birth of the style can be pinned back to 1885, and if Sullivan's Auditorium building, 4, can be accepted too, then that gives another birth-date in the eighties, but it also raises the problem of the apparent contradiction between Sullivan's ornament and the structure it clad, one being Art Nouveau, the other seemingly 'proto-Modern-Movement.' But no problem surrounds the case of Albert Gilbert, whose writhing metallic decoration, 6 (from the base of *Eros* in Piccadilly Circus), is very properly indicated by Mr. Madsen as the link backwards from Art Nouveau to Victorian revivals of the Baroque.



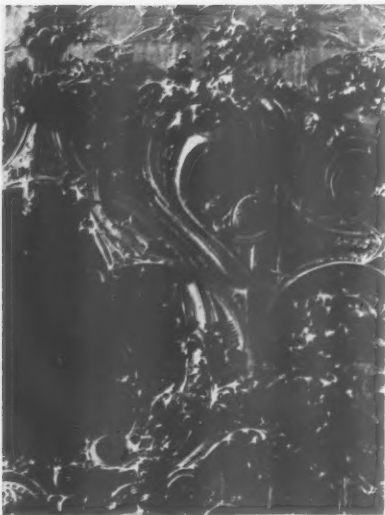
1. A. H. Mackmurdo: Title-page of 1883.



2, Antoni Gaudí: Palau Güell, Barcelona, 1885-89.



3, William Burges: House in Melbury Road, Kensington, c. 1875-80.



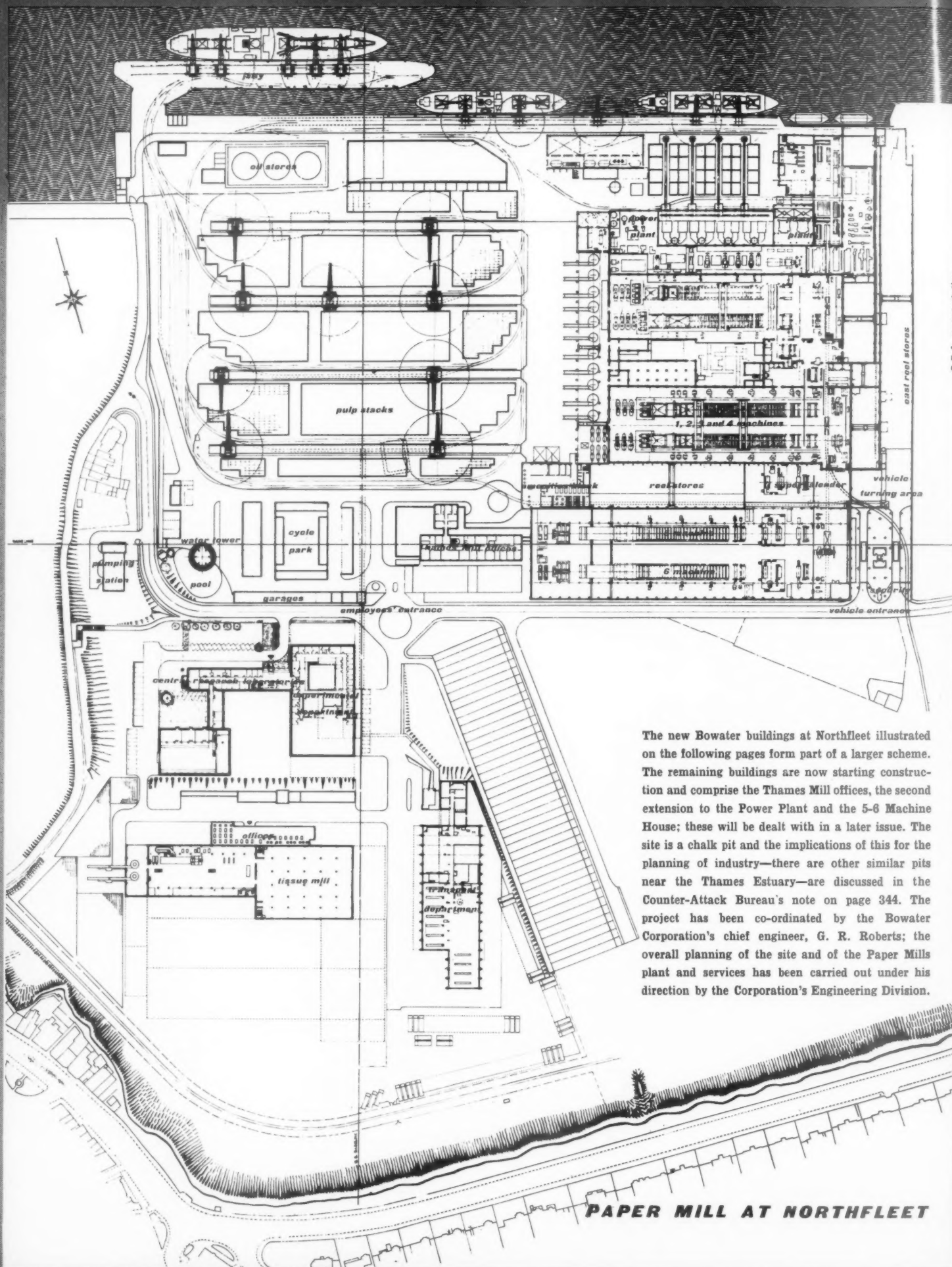
4, Louis Sullivan: Auditorium, Chicago, 1888.



5, Edward Burne-Jones: Pelican. Panel at the William Morris Gallery, Walthamstow, 1881.



6, Alfred Gilbert: Detail from Eros, Piccadilly Circus, 1892.



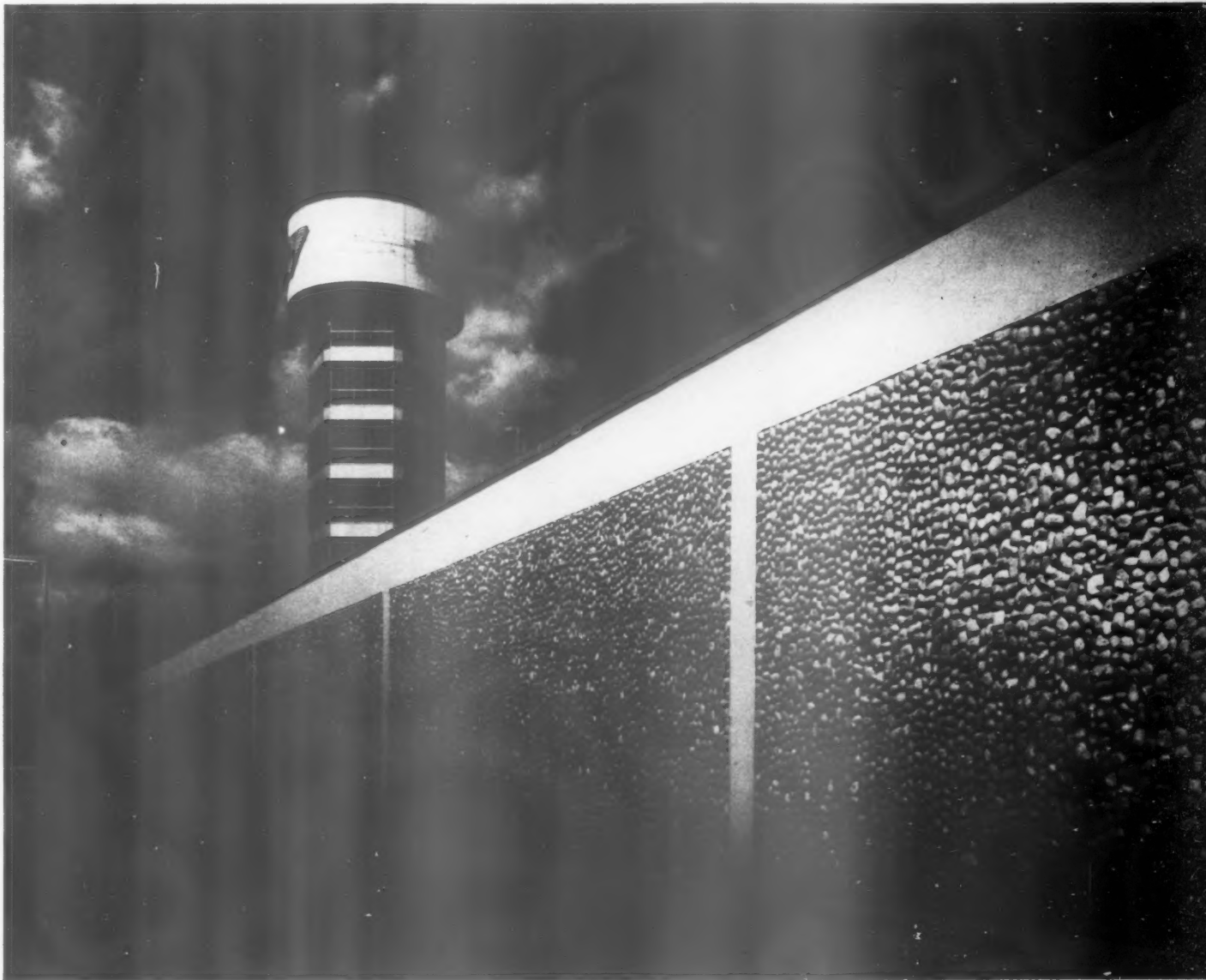
The new Bowater buildings at Northfleet illustrated on the following pages form part of a larger scheme. The remaining buildings are now starting construction and comprise the Thames Mill offices, the second extension to the Power Plant and the 5-6 Machine House; these will be dealt with in a later issue. The site is a chalk pit and the implications of this for the planning of industry—there are other similar pits near the Thames Estuary—are discussed in the Counter-Attack Bureau's note on page 344. The project has been co-ordinated by the Bowater Corporation's chief engineer, G. R. Roberts; the overall planning of the site and of the Paper Mills plant and services has been carried out under his direction by the Corporation's Engineering Division.

PAPER MILL AT NORTHFLEET

ENGINEERING DIVISION AND CENTRAL RESEARCH LABORATORY,
TISSUE MILL, TRANSPORT BUILDING, POWER PLANT, WATER TOWER

ARCHITECTS	FARMER AND DARK
controlling partners	Frankland Dark, Thomas A. Eaton, W. A. Henderson, J. T. Pinion
chief civil engineer	S. Jampel
consultants	lighting, John Bickerdike; landscape, Brenda Colvin; furniture, Robin Day

1. the water tower from Crete Hall Road, with a concrete-framed flint wall backing the Thames Mill garages.





2



3

Tissue Mill Because of shortage of time and somewhat extended deliveries of constructional steelwork, a prestressed concrete structure was adopted, although a steel frame would have been more flexible for machine fixings and extensions. The main structural elements in all three sections—Pulp Preparation House, Machine House and Conversion (Jumbo Roll House)—are precast, either normal reinforced concrete or pretensioned prestressed concrete on the Hoyer system. The decision to precast the main parts of the structure meant that early decisions had to be made on details of many items which would not normally have been necessary so early: for example, all cladding details were required so that fixings for the cladding rails and their supports could be made in the pre-cast columns and beams. The framing of the Conversion building is of normal layout on a 30' by 24' or 20' grid; that for the Machine House consists of pairs of columns on each side of the Machine Hall which itself is 62' wide and 200' long and accommodates a 20T travelling crane. The annexes are 15' wide and have floors at three levels, which are served by small travelling cranes. The roof construction consists of precast cantilever beams carried in the forks of the inner main columns and held down by the external columns, the inner ends separated by a 22'-wide monitor light in the form of pre-cast portal frames.

All columns throughout are reinforced concrete, precast in one length at Iver and transported by road to the site: the longest are approximately 71' long and weigh about 18 tons. Beams in the Jumbo Roll House are all prestressed, secondary floor beams being carried in special metal brackets which are bolted to the main beams with special high tensile bolts. The heaviest pre-

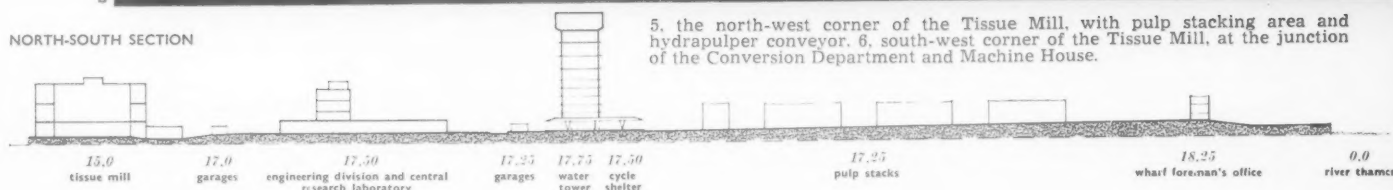


4

2. the Engineering Division and Central Research Laboratories, and the water tower, from the roundabout. 3. the same buildings, with the Power Plant in the background. 4. Engineering Division and Laboratories in the foreground, with the Tissue Mill and offices beyond right, and the Transport Department left centre. The main Gravesend-Dartford road is at the top of the cliff in the background.



NORTH-SOUTH SECTION



5, the north-west corner of the Tissue Mill, with pulp stacking area and hydropulper conveyor. 6, south-west corner of the Tissue Mill, at the junction of the Conversion Department and Machine House.

cast beams are prestressed and occur at the + 41.00 level in the Pulp Preparation House, and are 41' long and weigh about 13 tons.

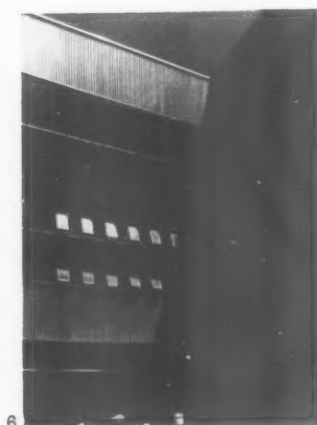
Both floors in the Jumbo Roll House are of precast palette construction with an in situ topping, saving dead-weight and shuttering. Elsewhere all floors are in situ because of the number and variety of fixings, holes, etc., required for plant. All purlins throughout are 14" deep and prestressed. All floors are designed for a super-load of 3 cwt. sq. ft. except the + 41.00 floor in the Pulp Preparation House which is designed to carry tanks weighing about 60T each. The roof comprises bitumen-covered corrugated aluminium decking units with 1" cork vapour barrier insulation and with three layers of roofing felt in bitumen. The final roof finish has granite chippings.

The reinforced structural frame is

clad with patent glazing incorporating opaque coloured glass spandrel panels to cover upper inner cill level walls and floor depths. The glazing bars are at 2' 0 1/2" centres to allow a standard 2' 0" width of glass to be used. The height of the patent glazing is 32' 0". This envelope of patent glazing is surrounded at a higher level by a 9' 0" band of anodized aluminium corrugated sheeting and similarly by a band 9' 0" deep beneath the patent glazing. This cladding covers all the floors from + 16.00 level to the roof. The ground floor is walled entirely in 11" cavity brick walling in purple Uxbridge flints with black pointing.

Internally the concrete frame is exposed. In the Pulp Preparation House the columns are fair-face. The Main Machine House has an acoustic suspended ceiling, and both end walls are lined with acoustic tiling. The floor finishes generally in the pulp preparation area and the machine house are of in situ granometallic and in the conversion end non-slip flooring strip is to be laid.

On the north side of the Tissue Mill there is a single-storey office block which houses the Mill Manager and his staff. The main Mill entrance, flanked by the time





7, the main entrance to the combined Engineering Division and Central Research Laboratories block. 8, the entrance lobby of the same. 9, south elevation of Central Research Laboratories.

7

office and ablution and locker rooms, is also in this block. The Office Block is attached to the main north wall of the Mill and consists of a precast concrete frame with a curtain wall based on a 3' 4" modular grid, formed of 3½" by ¼" steel transoms and mullions with external spandrel panels in opaque coloured glass.

The fascia of the Office Block takes the form of lightweight cladding blocks, faced with white Italian glass mosaic, and the east and west ends of the block are formed of lightweight blocks with a granite and marble aggregate finish. Internally, partitions are either 3" nailable building blocks or 4½" brick and floor finishes are cork, wood block and in situ terrazzo in the office entrance hall and lavatories.

Architects-in-charge, V. H. Lee and I. T. M. Davis; assistant architects, A. J. Potts, D. E. Heath and A. J. Jowsey; the assistant civil engineer was T. Salter.



8

Central Research Laboratory The planning is to a module of 3' 4". The structure is a light steel frame consisting of box stanchions and open lattice beams. The main client requirement was the housing of services between ceilings and floors with full accessibility. Services in this block include plenum trunking, all the usual services for laboratories, and a fume extract system; this required a floor depth of some 3'. Another important requirement was complete flexibility of partitioning with as few columns in the main floor area as possible. This resulted in a clear span of 40' of beams at 3' 4" centres. Floors consist of pre-cast concrete units 3' 4" by 10" by 2", topped with a structural screed and a wood block finish. The ceiling panels consist of acoustic perforated metal trays backed up with absorbent material and top cover plates. The removeable laboratory partitions are Holoplast.

Lighting is generally fully recessed in the ceiling space, and fluorescent tubes are fixed in fibrous plaster

coffer units 10' long; metal louvre units are fixed coffers flush with the ceiling. A special requirement was arrived at for the drawing office where steel triangular trusses 60' long were used with beaten glazing over a laylight of corrugated plaster between. The trusses contained the plenum trunking and conduit runs, the whole encased in fibrous plaster. Heating is by a medium pressure hot-water system; 75 per cent. is from three main plenum plants; and 25 per cent. from perimeter vectare units.

The window wall consists of steel flat droppers at 3' 4" centres with faced frames fixed, the whole being clad externally in stainless steel. Fine steel was used for future ease in maintenance, and because of cement dust in the atmosphere.

The architect-in-charge was R. L. Brewerton, assistant architects A. J. Tait, A. J. Potts, D. E. Heath, V. H. Lee, I. T. M. Davis; assistant engineer W. Smyth.





10

Interior views of the combined Engineering Division and Central Research Laboratories; 10, entrance hall; 11, the same looking towards the Engineering Division; 12, the same looking towards the Engineering Division; 13, looking from the staircase down to the entrance hall.



11

Laboratories conference and projection room; and 13, looking from the staircase down to the entrance hall.



12



13

Transport Department This is a reinforced concrete building with a main garage area of 24,325 sq. ft. which includes service bays, coach building, paint shops and ancillary stores with in addition four washing bays, totalling 4,000 sq. ft. It is intended to service the southern fleet of Bowater vehicles. The shape of the building was determined by the high bays being allocated to servicing and the low ones to stores and workshops. The garage is designed on a bay spacing of 17' 6" which allows for the largest size lorry with a satisfactory circulation around it. The outside wall of each bay is taken up by horizontal folding sliding doors giving a clear opening, again for the largest size lorry, of at least 13' 6" in width with 15' head room or an infill panel where a stores bay goes behind; these panels are interchangeable with the doors to allow reorganization of the bays if required. The stores are formed by demountable steel and mesh partitioning.

The roof of the garage is 5" reinforced concrete slab with $\frac{3}{4}$ " Bowater Board insulation topped with felt. Internally the frames of the garage will be left natural concrete, although for cleanliness they have been painted up to head height. The floors are monolithic granolithic.

Attached to the garage are welfare amenities, including a mess room, locker rooms, toilets, showers and drying rooms. The administrative offices are on the mezzanine level within the garage. Lighting throughout is

fluorescent except in the amenities block which is tungsten. The architect-in-charge was G. C. Bodker, assistant architect P. P. Craymer, assistant engineer, R. Farnborough.

Power Plant, First Extension

There is one pulverized fuel boiler producing 220,000 lb. of steam per hour at 900 lb. per square inch and 915° Fahrenheit. The boiler and bunkers are enclosed by patent glazing, sheeting, and brickwork at low level under a concrete roof at + 80' 3" over the bunkers, and + 65' 0" over the boiler, leaving the main part of the boiler exposed from this height up to + 120', where there is a large flat

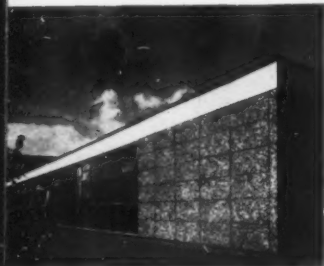
lightweight roof overhanging all round. The free standing concrete chimney to the north-west of the power plant is 300' high, and the flue gases are led into it by a duct across the roadway on the river side of plant at a height of 43'. The civil engineer-in-charge, K. A. Owens; and the assistant architects were S. Finkle and E. J. Bee.



14. north-west corner of the first extension to the Power Plant. 15. below, the east end of the Tissue Mill, seen from the south-west corner of the Transport Department.



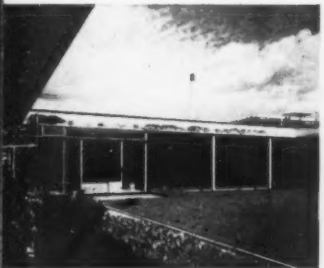
Views of the Engineering Division: 16, from the north-east; the fascia units are precast concrete faced with rough marble aggregate. 17, courtyard and pool from the west, and 18, from the south-west. 19, conference room. 20, tile mural by Hans Tisdall of trees, confirming by its rhythm its position in a corridor, and its depth as a drop cloth as seen across the courtyard.



16



17



18

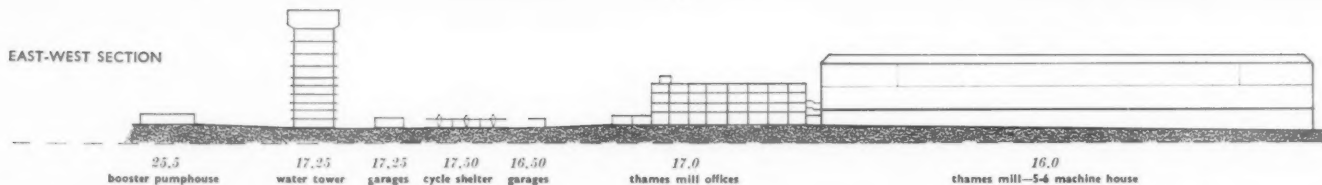


19

20



EAST-WEST SECTION



Engineering Division This is a single-storey block adjoining and sharing a courtyard with the Central Research Laboratory; the description of the latter, on page 305, applies in most points of construction and

services to the Engineering Division also. Ceilings, however, are 3' 4"-square fibrous plaster panels; and partitions are fixed and consist of 4 1/2" clinker.



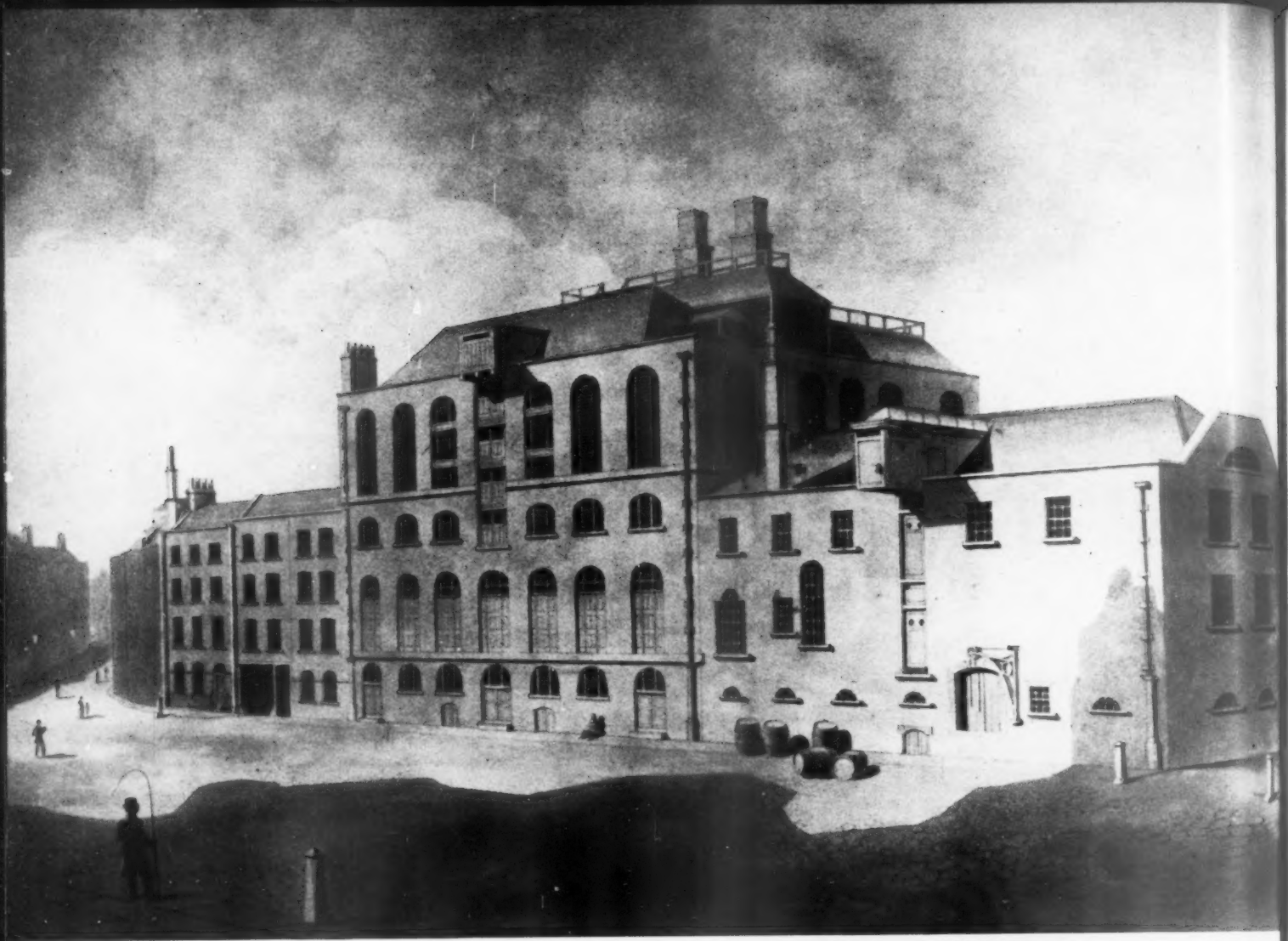
21. the water tower.

Water Tower The tower is 143' high rising out of a pool which forms part of the landscaping of the site. Its capacity is 200,000 gallons (being the main mill supply in the manufacture of paper) including a reserve for the mill sprinkler protection. It was found cheaper to eliminate the usual bracing and provide a floor construction instead. Floors were in any case required to the lower part of the Tower. These have been clad in anodized aluminium patent glazing with asbestos fibre-board anodized fluted aluminium faced spandrel panels. The tank is colour-washed, with a silver sand add-mix.


309

Mounted on it are three Bowater neon house marks in red and blue, joined by two white wavy lines, which may be read up and down the river and across from the main Gravesend-Dartford road. The tank is lined with asphalt. The offices accommodate the Civil Defence Officer, lecture room, lavatories and lockers, and on the fifth floor the Chief Paper Maker to the whole organization: Access is by a cast iron spiral staircase. A lift from ground to sixth floor will shortly be installed.

Architect-in-charge was G. C. Bodker, assistant architect E. Jobling, and assistant engineer W. Smyth.



THE GEORGIAN BREWERY

While breweries are one of the largest surviving classes of Functional Tradition buildings—as was pointed out in the special issue of the *Review* for July, 1957—many notable examples have been rebuilt or destroyed. Two from the late eighteenth century are shown opposite , the Griffin Brewery, Clerkenwell, above, with its symmetrical centre-piece set off by less formal additions, and George's Porter Brewery, Bristol, below, a text-book example of the use of louvred windows and ventilators in bold, simple silhouettes. In the article below, Brian Spiller discusses the Georgian period of English brewery-building, whose unaffected architectural qualities are admirably summed up by these two examples.

In 1760, when London's 'capital brewhouses' were still a recent phenomenon, a contributor to the *Gentleman's Magazine* tried to account for their emergence.¹ 'At the beginning of King William's reign,' he wrote, 'beer was mostly fetched from the brewhouse by the customers themselves, and paid for in ready money: so that the brewer entertained but few servants, few horses, and had no stock of ales by him, but a trifling quantity of casks, and his money returned before he paid either his duty or his malt.' Industrialization was accelerated in about 1722 by the invention of porter, the result of a more efficient method of brewing. Its mounting popularity enabled the more enterprising brewers to take over an increasing share of the London market.² By the end of the century, Pennant declared that 'the sight of a great London brewhouse exhibits a magnificence unspeakable'—an opinion echoed by numerous foreign visitors; while two loyal citizens of Southwark claimed that Thrale's Entire extended the reputation of British produce 'from the frozen regions of Russia to the burning sands of Sumatra. . . . It refreshes the brave soldiers who are fighting the battles of their country in Germany, and animates with new ardour and activity the colonists of *Sierra Leone* and Botany Bay.'³

The brewing trade, according to its economic historian,⁴ was 'technologically very suited to large scale production within the single plant. . . . In essence, the problem was simple. To take advantage of the larger market, the scale of manu-

facture had to be increased. This was most conveniently done by increasing the size of the utensils, for this itself gave economies of scale in costs of construction and materials, and the number of workers did not increase proportionately with the size of vat, copper and "back." Moreover, because the handling of a liquid in manufacture was simpler than processing a solid such as cloth or iron, planning the brewery led directly to major economies.' These are specified in the *London and Country Brewer* of 1742. 'It is truly necessary in the first place,' the author emphasizes, 'to be Master of a convenient Brewhouse; for, without this, it is but a lost Attempt to get right Malt-Liquors.'

For this Purpose [he adds] where it is to be erected independently of any other Building, in my humble Opinion, three Sides in four of its upper Part, or second Floor, should be built with wooden Battens about three Inches broad, and two thick, according to the present London Mode; which by its many vacant square Holes admits sufficient Air, and seldom too much Sun; so that the Backs or Coolers by this means have a quick Opportunity to cool a thin laid Wort;⁵ especially if the Wall's further Side stands to the South-west, where the Copper is to be fix'd with an Arm near the Bottom of the same, and a large Brass-cock at its End, to discharge with Expedition hot Water into the Mash-tun, and Wort into the Coolers. For this Purpose, its Bottom should stand about ten Feet above the common Level of the Street-ground, whereby is prevented in some Degree the cooling of the Water, and wasting of the Wort; for now the tedious ascending Motion of the Pump is avoided, and the Charge of that and Man's Labour saved.

Three more 'Improvements of late Years' had cut the labour force by half. First, malt was now ground on the floor above the mash-tun into which it descended by gravitation down 'a long descending wooden close square Spout or Gutter,' instead of being carried in baskets.

⁵ Wort: an extract of ground malt mashed (or thoroughly mixed) with water. After boiling with hops, it is cooled down before fermentation with yeast converts it into beer.

A horse-mill ground the malt and pumped water from the 'Recevoir and Well': both jobs had formerly been done manually. Third, the spaciousness of a 'Great Common Brewhouse' allowed wort to run by gravitation into a series of wide and shallow cooling vessels placed on the same level, so that cooling was expedited by 'a due Freedom of Air, which in a single Stage seldom ever wants.' 'This better Management,' he concludes, 'saves the Loss of a great deal of Time, Waste and Labour.' It did more than that. Apparently before they had begun to consult engineers or architects, the brewers themselves introduced the functional principle of brewery design. The 'gravitational' system permits all raw materials to be pumped or hoisted at the outset to the highest point of the building, whence they descend by the force of gravity to various stages of processing.

A later manual continues the theme. 'In erecting a large work of this kind, every thing is to be considered, that can save the labour of the people employed; for as every thing is done in quantities, the difficulty of moving the ingredients would be very great, but for the help of such early care.'⁷ The leading porter brewers had another problem on their hands. Their production rose steadily throughout the century; Ralph Thrale, for example, was brewing 32,000 barrels in 1758; his son Henry, 80,000 by 1781; the successor firm, Barclay Perkins, 205,000 by 1809. What was said of Thrale's in 1795 was true of its main competitors: 'The brewery has risen by degrees to its present eminence of character and spaciousness of accommodations.' As barrellage mounted, so did the need for greater storage capacity. Malt had to be stored in advance of brewing, and its arrival, down the Lea from Ware or round the coast from Norfolk, was subject to delays; while porter took as much as nine months to mature. The leading breweries, long established on narrow sites in the rookeries of inner London, had to expand as best they could. Whenever possible, adjoining property was taken in; and new buildings were often multi-storey. Thus Sir William Calvert's twelve buildings

in Thames Street included by 1760 '4 Stories of Malt Lofts with Mill-place and Cooperidge under.'⁸ In 1766 a warehouse '6 Storeys, strong built' was added. Only the medium-sized breweries on London's outskirts had plenty of room. William Greene—builder of the charming Blue Coat School in 1709—owned a large ornamental park at Pimlico, where he erected 'the finest Brewhouse in Europe' not long before 1722.⁹ Under his grandson, Edward Burnaby Greene, an inept poet and a calamitous man of business, the Stag Brewery's output fell far short of its capacity. In 1760 it consisted of nine main buildings: the 'Great Brewhouse with Lofts and Mill-place' (111 ft. by 93 ft.), the 'Pale Ale Brewhouse and Long Malt Lofts' (110 ft. by 40 ft.), the 'Great Stable,' the 'Ten Storie House' (107 ft. by 33 ft.: purpose unspecified), the dwelling house (Pimlico Lodge) and a dower house, the 'Dray Horse Stable,' the 'Mill Horse Stable,' and the 'office belonging to the Cooperidge for Hoops and Washing Casks.'¹⁰ These disappeared after 1797 under a new owner, John Elliot, whose new brewhouse was in turn submerged by the mid-Victorian additions of Watney & Co.

One brewery was completely rebuilt according to a preconceived plan, but it took a lifetime. Samuel Whitbread, moving to the King's Head, Chiswell Street, in 1750, expanded it in stages until, at his death in 1796, it was the greatest in England. 'The Brewhouse, as the possession of an individual is & will be when finished still more so, the wonder of everybody,' one of his lieutenants wrote in 1786, 'by which means our pride is become very troublesome, being almost daily resorted to by Visitors, either Friends or Strangers, to see the Plan.'¹¹ No brewer exercised greater ingenuity in working out schemes for the most efficient use of space. Not content with adding fresh storeys to existing buildings, he had vaults sunk underneath for storage. On building the

¹ 'History of the London Brewery': xxx, 527-9.

² There is an early reference by César de Saussure in a letter from London, dated October 29, 1726. 'The greater quantity of this beer is consumed by the working classes. It is a thick and strong beverage, and the effect it produces, if drunk to excess, is the same as that of wine; this porter costs three-pence a pot. In London there are a number of alehouses where nothing but this sort of beer is drunk.' [Hence 'porterhouse steak.'] *A Foreign View of England*, 1902, p. 158.

³ *Some Account of London*, 1790, p. 279.

⁴ M. Concanon and A. Morgan, *History of the Parish of St. Saviour's, Southwark*, 1795, pp. 226-34.

⁵ Peter Mathias: *The Industrial Revolution in Brewing (Explorations in Entrepreneurial History)*, V, No. 4, Harvard University, 1953). The present article is heavily indebted to his researches.

⁸ Guildhall Library, MS 8674; ledgers of the Hand in Hand Fire Office, 150 vols, 1696-1865.

⁹ W. Stow, *Remarks on London*, 1722, p. 3.

¹⁰ Guildhall MS 8674.

¹¹ MS letter by Joseph Delafield, held by Whitbread & Co.

⁷ E. Watkins, *The Complete English Brewer*, 1768, p. 134.

Great Storehouse¹³ in 1774, it occurred to him that its vaults would hold more if occupied by cisterns instead of barrels. 'This being an entire New Idea, I was determined to pursue it and consulted Mr. Milne.' Robert Mylne advised sealing off sections with 'Bricks thick worked with Pozzolam Tarris and Strong Lime'; and 'had no doubt of its success and said he would stand under when it was full.' Luckily he did not, because when 'filled only with water, the force was so great that it ran through the walls as through a Sieve.'¹² Other experts were then called in to advise on a suitable lining: John Smeaton, then Josiah Wedgwood in 1778 and Matthew Boulton in 1781. Smeaton's designs for the two largest cisterns, holding the equivalent of 3,600 barrels each, are preserved in the library of the Royal Society.¹⁴ In 1787 Whitbread calculated that his seven cisterns held as much as 12,350 barrels, though 'the same Room the Cisterns stand in would contain only 1,000 Barrels'; in addition, other vaults held 18,900 barrels, and his vats 8,550, but 'the same Room the vats stand in would contain only 1,700 Barrels.'¹⁵ His last building, insured in 1796, was a 'Stack of New Vat Warehouses, part one lofty Storey 45 feet high and part 2 Storeys, 138' x 170'.¹⁶

The Anchor Brewery, Southwark, was greatly expanded by Henry Thrale, amateur of the arts and the first brewer known to have employed a regular surveyor. This was Richard Summersell, who was active about 1755 and who made a will in 1772.¹⁷ 'The immensity of the Brewery astonished me,' an Irish clergyman exclaimed in 1773, 'one large house contains and cannot contain more only four store vessels; each of which contains 1,500 barrels & in one of which 100 persons have dined with ease.'^{17a} B. Faujas de Saint-Fond, author of the pioneer work on aerostation, supplied a more scientific description in 1784—'the great year of a hundred thousand barrels,' forecast by Thrale's adviser, Dr. Samuel Johnson:

'The buildings and yards, which are of a vast extent, have no other object than utility; every thing is solid, every thing is adapted to its purpose, but every thing is an absolute stranger to ostentation. . . . The beer is fermented in huge square vessels, raised to the height of the first floor; and pumps, disposed with much art, facilitate the supply of water. When the beer is made, it descends through conduits, and is distributed, by means of pipes, into a number of casks, placed in an immense cellar. The beer becomes of a more perfect quality in those casks, where it remains, however, but a short time; from them it is drawn off by long spouts, raised, by pumps, into vats of an astonishing size, which are

continued on page 321

¹³ The Great Storehouse, as extended in 1782, had 'two lofty stories' and measured 169 ft. by 70 ft. It survives as the Porter Tun Room. 'The open timber roof is quite spectacular,' Dr. Pevsner wrote in the London volume of the Penguin Buildings of England series.

¹⁴ Whitbread's own record, quoted by P. Mathias, 'The Great Cisterns of Chiswell Street,' *House of Whitbread*, Summer, 1952.

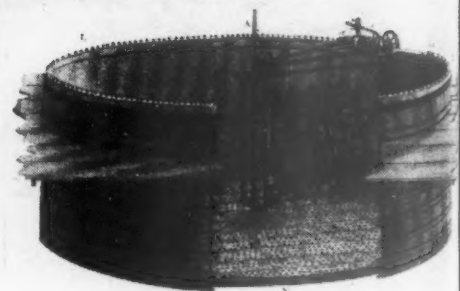
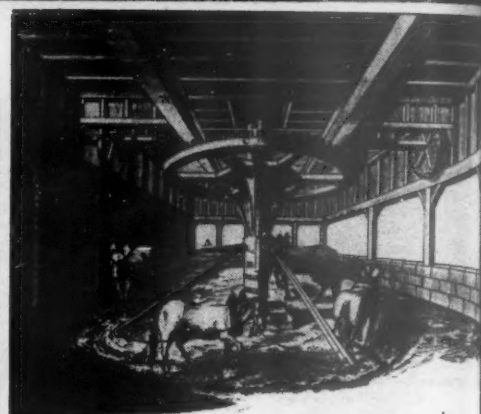
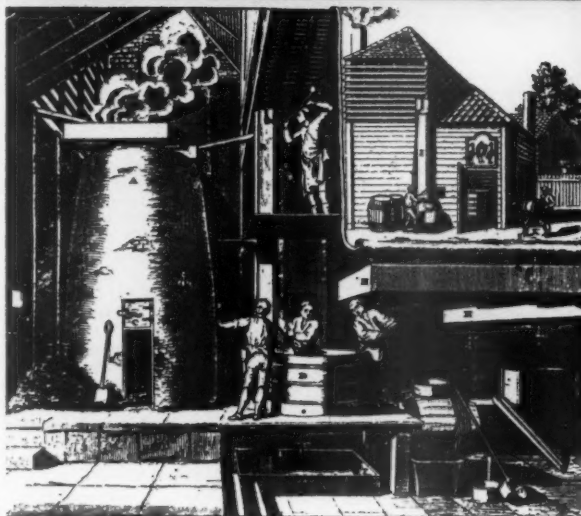
¹⁵ Designs by John Smeaton, FRS: vol. 4.

¹⁶ Whitbread Property Book at Southill Park.

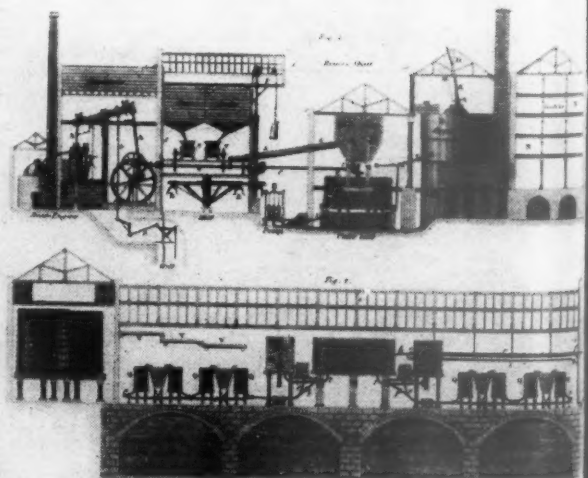
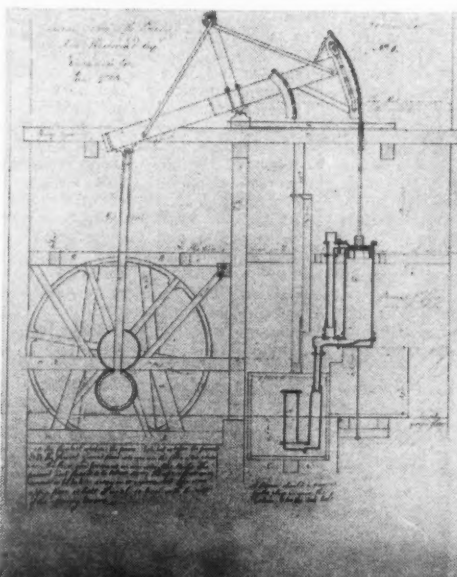
¹⁷ Guildhall Library: MS 8674. The building, though damaged in the second world war, survives as the cooperage.

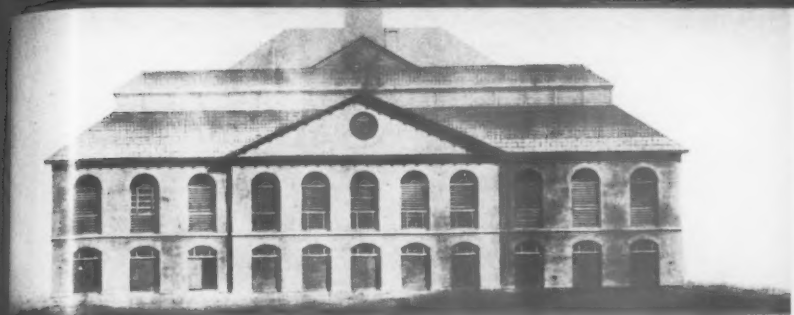
^{17a} *Survey of London*, Vol. 23, pp. 126 and 134.

^{17a} Dr. Campbell's *Diary*, ed. J. L. Clifford, Cambridge, 1947, p. 51.

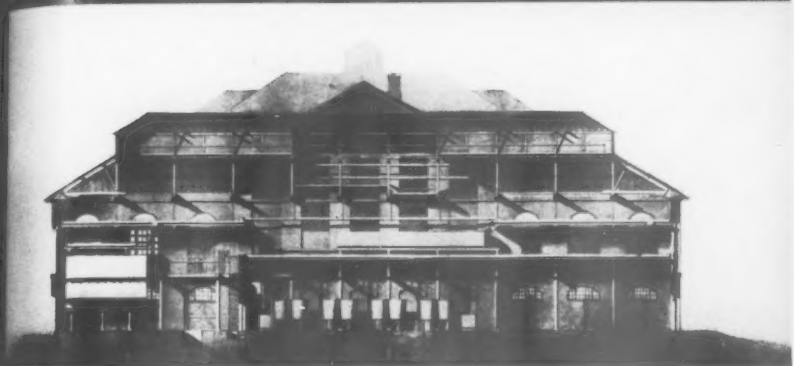


Brewery machinery: 3, a big brewhouse in 1756, and 4, a small one, still entirely hand-driven, in 1748. 5, the horse wheel of a French brewery, 1763. 6, a steam driven mashing machine from Whitbread's, 1813. 7, Boulton and Watt rotary steam engine for operating pumps and malt mills, first installed 1784. 8, sections of Whitbread's brewery, 1819: malt loft, hoppers etc. above and porter tun room below.





9

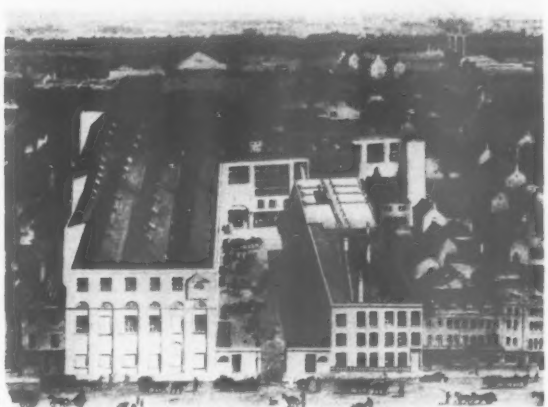


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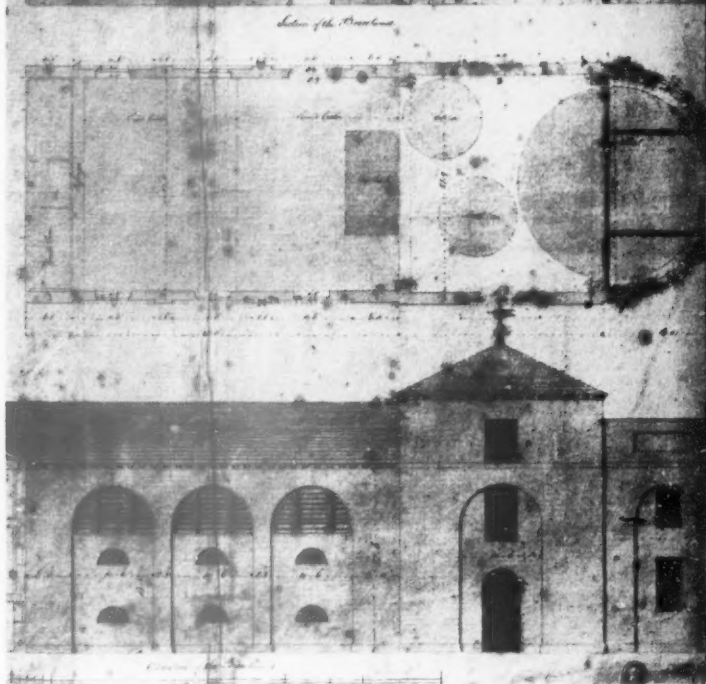


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THE GEORGIAN BREWERY



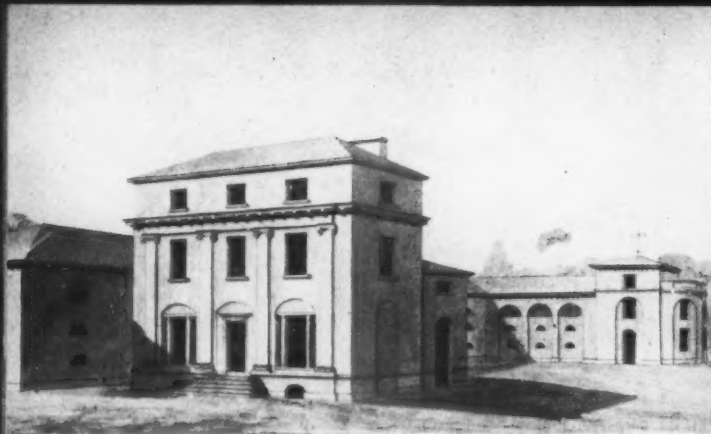
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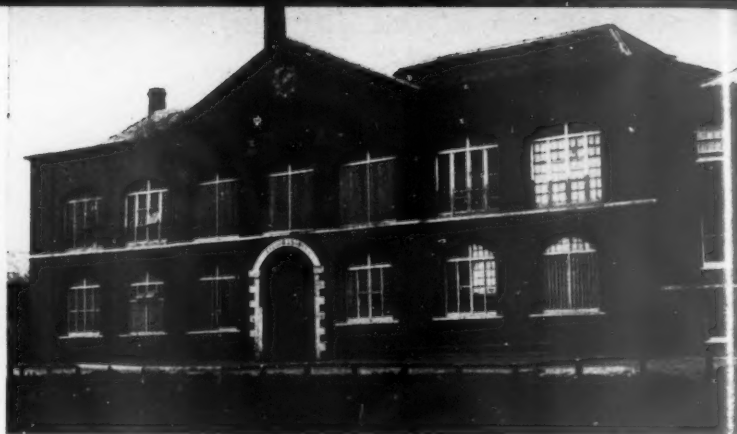
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9, elevation and section of tun room and running storehouse of the Stag Brewery, Pimlico, designed by George Saunders, 1796-1802. 10, the brewery today, now part of Watney's, Victoria. 11, Calvert's brewery and dwelling house, Upper Thames Street, London, mostly

rebuilt in 1772-90 and destroyed in 1940; the remains are immediately east of Cannon Street station. 12, Brown and Parry's brewery, Golden Lane, London, in 1802, now demolished. 13, Working drawings of Simonds's brewery at Reading, designed by Soane, 1790.



14



15



16



17



18

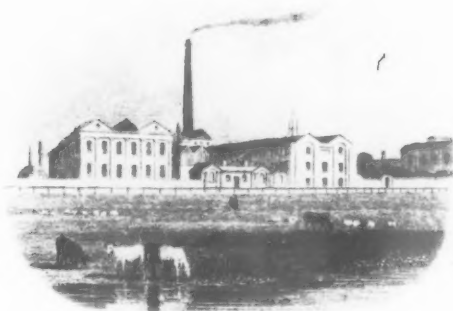


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14, perspective drawing of Soane's brewery for Simonds's at Reading. It includes the brewer's house, also shown on page 320. 15, Elgood's North Brink Brewery, Wisbech, c. 1796. 16, Cobb's Brewery, Margate, by W. Teanby, 1807-8. 17, Simpson's Brewery, Baldock.

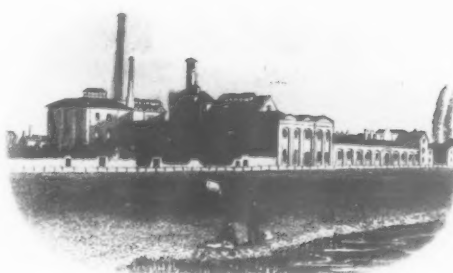
18 and 19, the Lion Brewery, Lambeth, by Francis Edcards, built 1836, badly bombed in the war and demolished 1949. 18 shows the Thames frontage, 19 the Belvedere Road entrance. The lion is now outside Waterloo Station at the York Road entrance.

THE GEORGIAN BREWERY



Allsopp & Co. Brewery, Burton-on-Trent

20



Salt & Co. Brewery, Burton-on-Trent

21



Bass & Co. Brewery, Burton-on-Trent

22



23



24

20-22, the three leading Burton breweries in lithographs of the 1850's—in the early nineteenth century they stood side by side between the High Street and the Trent: 20, Samuel Allsopp's (demolished); 21, Salt's (now derelict); 22, Bass's (demolished and rebuilt on the same

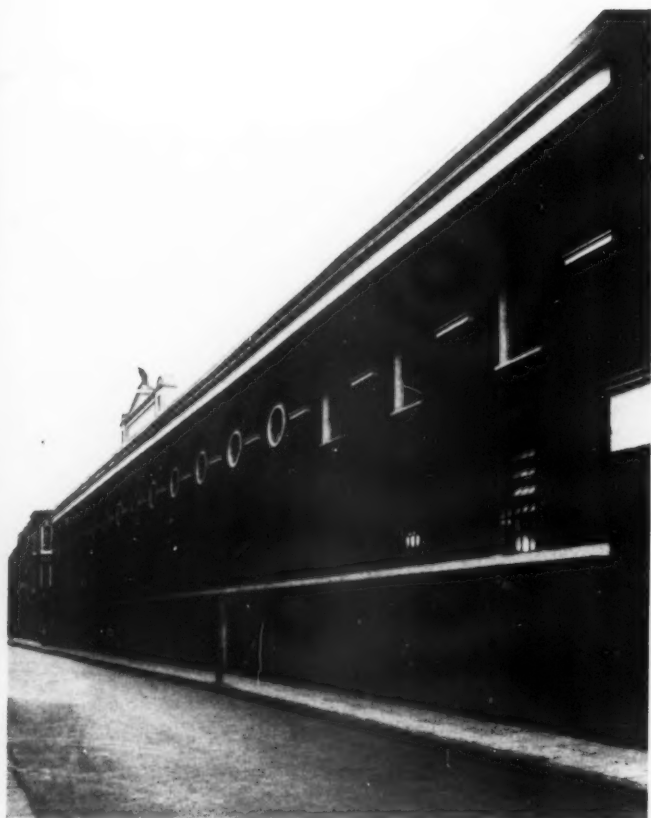
site, 1876). 23 and 24, Guinness's St. James's Gate Brewery in Dublin. 23 is the visitors' room, originally a Catholic church and then a bank. 24, the main entrance which was there when Arthur Guinness bought the brewery in 1759.



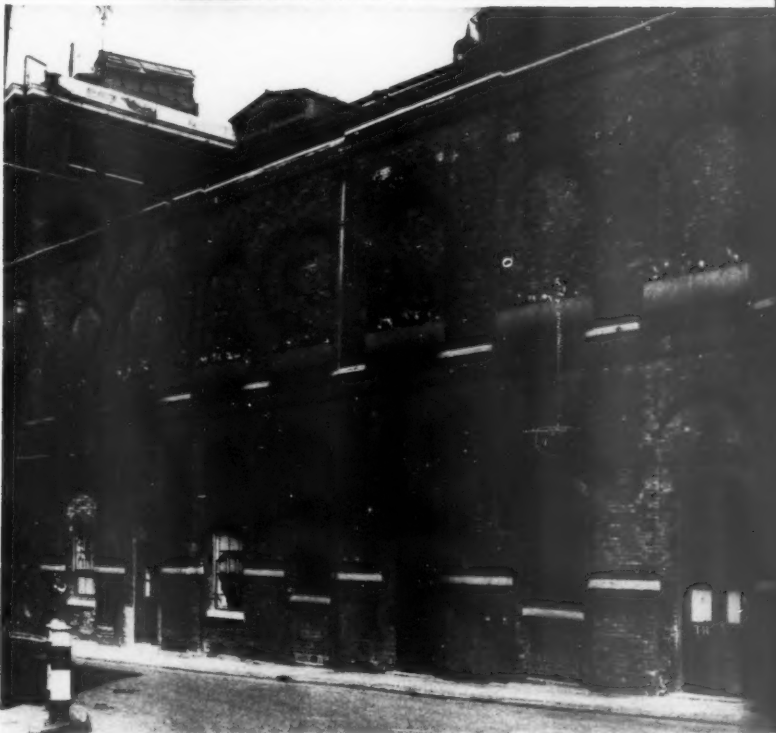
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27



26



28

25-27, Truman's Brewery, Brick Lane, Spitalfields. 25, the Wilkes Street frontage, insured as a new building in 1856 (reproduced from the forthcoming *Spitalfields and Mile End* volume of the *Survey of London*). 26, the former stables for 200 horses, built before 1842. 27, the

vat house, possibly once a chapel; the bells in the clock are dated 1806. 28, the present lager office of Barclay Perkins's Anchor Brewery, Southwark, 1835; most of the brewery was destroyed by fire in 1832 and rebuilt soon afterwards. See also 31, opposite.



29



30

THE GEORGIAN BREWERY



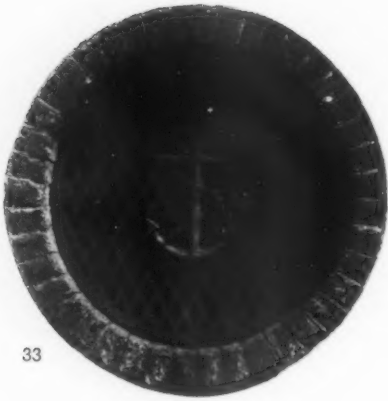
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32

29, the entrance to Whitcell Mark's tiny and unaltered brewery in Highgate, Kendal, founded 1757 and possibly the only survivor of the pre-industrial breweries built as an adjunct to the dwelling house. 30, the entrance to Gardner's Original Brewery, High Street, Cheltenham,

date unknown. 31, the Counting House, dated 1830, of Barclay Perkins's Anchor Brewery (see 28, opposite). 32, the Union Brewery, Nene Parade, Wisbech, regrettably demolished about 1952 and replaced by a self-complacent neo-Georgian police headquarters.



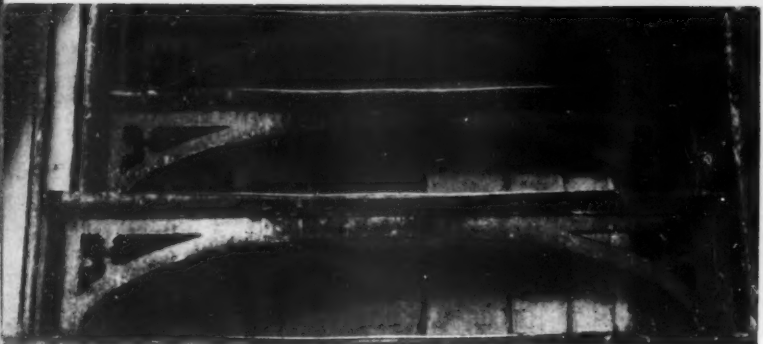
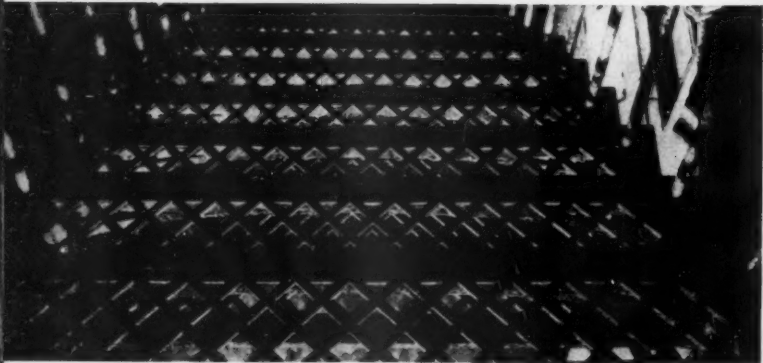
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THE GEORGIAN BREWERY

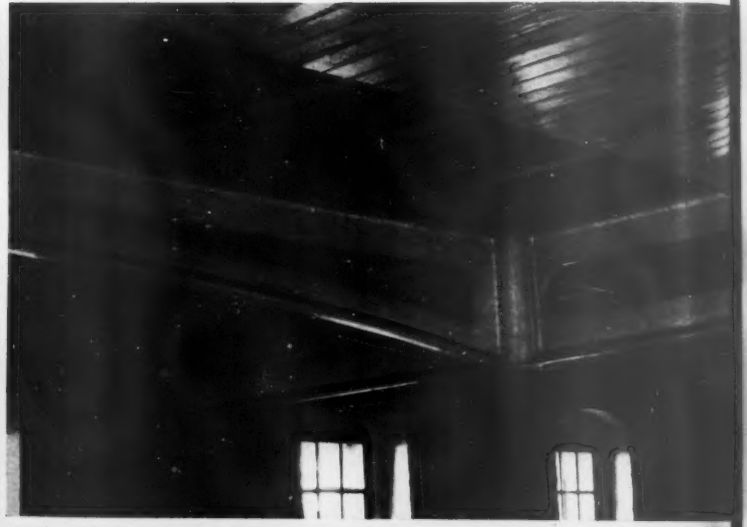


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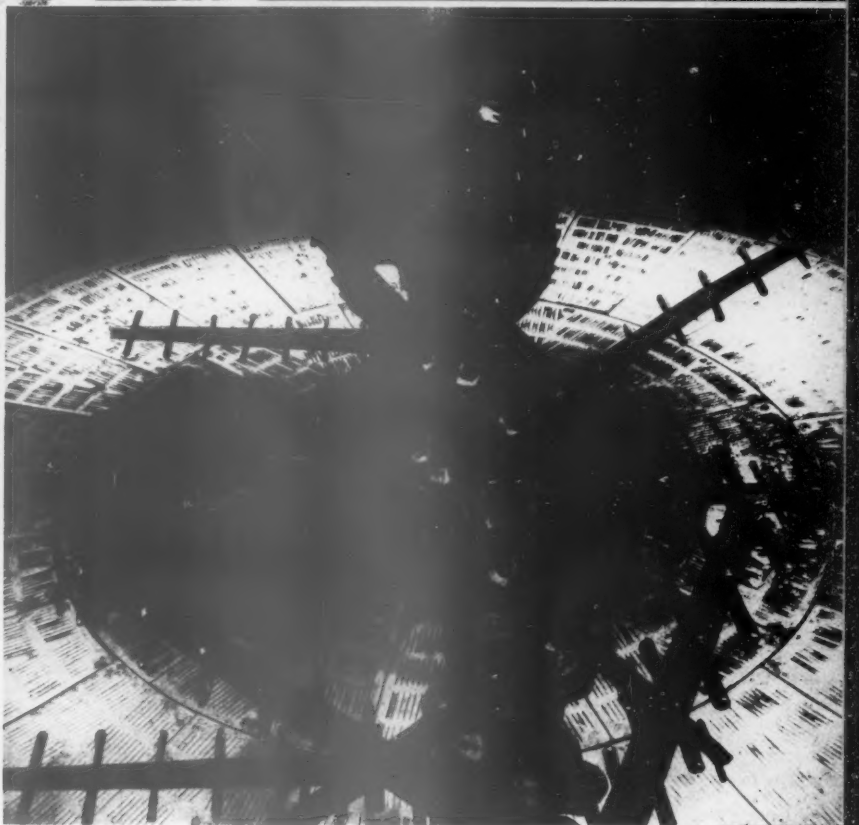
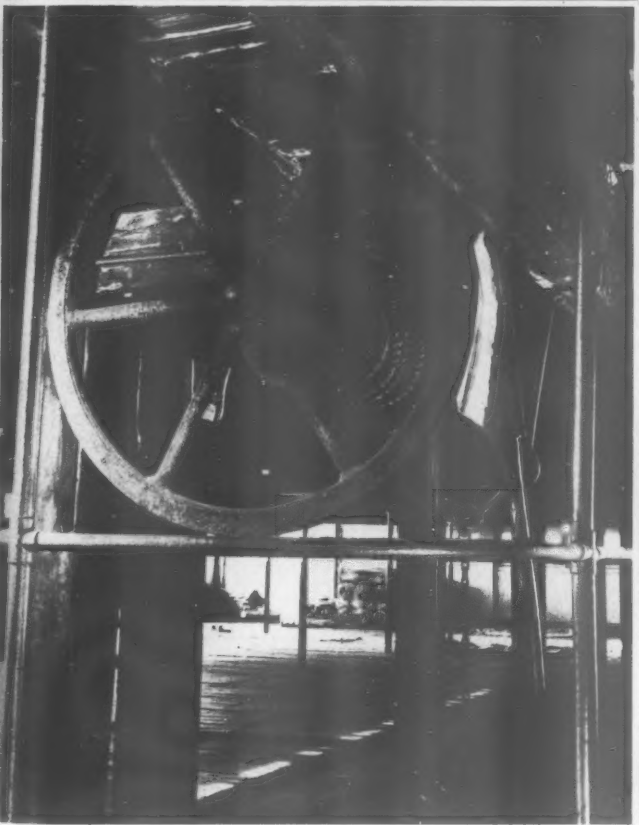
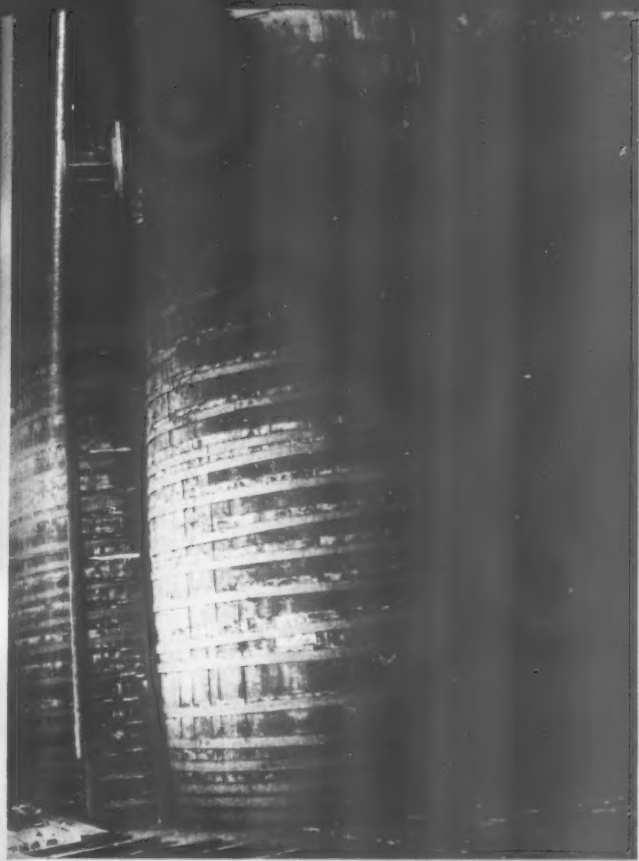


38
39



Brewery details from Barclay Perkins's Anchor Brewery, Southwark: 33, trade mark. 34, cast iron columns on the second floor of the porter tun building, 1820. They support and are supported by 40 foot long pitch-pine beams—the total span is 80 feet. 35, the original wort

cooler of riveted copper sheet in the ale side brewery, 1832. The cast iron staircase from the same building: treads, 36, and risers, 37. 38, the interlocking cast iron beams used throughout the building. 39, the manufacturer's nameplate in cast gun-metal on the last of the

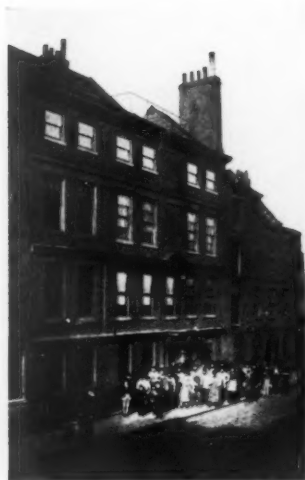


original barrel coppers, in the brewhouse. On this page are more details from the Anchor Brewery. 40, top left, two of the surviving vats of English oak in the storehouse, 1820. There were once 150 of them; this pair held three hundred barrels apiece. 41, top right, and 42, bottom

left, a balanced hoist, in the porter tun building, for lifting pockets of hops to the upper floors, probably as originally installed. 43, bottom right, mash tun rake gear in the brewhouse, used to stir the 'mash' of hot water and crushed malt, converted by fermentation into beer.



44



45



46



47



48



49



50



51



52



53

Brewery houses: 44, the original layout with the brewery as an outbuilding to the house, Whitwell Mark's, Kendal. Later, one big house was provided for a partner or responsible senior clerk to live on the premises. 45, Chiswell Street, E.C. (Whitbread). 46, Dublin (Guinness). 47, Burton on Trent (Musgrave). 48, Windsor (now Courage's district offices). 49, Watford (Benskin). 50, Baldock (Simpson's). 51, Reading (Simonds's, de-

signed by Soane, demolished 1900). 52, Burton on Trent (Allsopp). 53, Ivinghoe, Herts. (Roberts and Wilson, now a youth hostel). 54, the Thrales' house at the Brewery, Southcark, burnt in 1832, famous for its Johnson connections.



54

continued from page 312

placed vertically, and the top of which cannot be reached without a ladder: a gallery goes round the places which contain these vats:

Four store-rooms, on a level with the ground floor, and of different sizes, are appropriated to receive them. In the first, which is the smallest, there are 6 vats, containing each 300 hogsheds; a hogshedd contains about 240 bottles; in the second, there are 28 vats, of 400 hogsheds; in the third, 14 of 900 hogsheds; and in the fourth, 4 of 500 hogsheds each. Thus their united contents amount to 31,600 hogsheds. . . .

These vats, made from wood of the choicest quality, are constructed with an admirable solidity, accuracy, and precision, and even with a kind of elegance: some have as many as 18 hoops of iron: and several were pointed out to me, which had cost 10,000 French livres a-piece. I have already said, that they were all placed on end around the walls; but, on asking what they stood upon, my conductor showed me, that they rested on brick arches of great solidity, strengthened by a number of thick upright pillars of wood. Their bottom was thus protected from the humidity of the ground, and it was more easily seen whether the beer escaped. The top of each vat is carefully covered with thick planks, joined together in the most perfect manner, and these again were covered with 6 inches of fine sand.¹⁸

An 'intelligent correspondent'¹⁹ supplied a general description in 1795:

'The buildings are remarkably ample and convenient. . . . The cooperage, the carpenter's, the wheelers' and the farrier's shops are particularly large. . . . The stables nearly complete the form of a large quadrangle and are capable of containing . . . no less than four-score horses. The inside of the brewhouse strikes the eye of the curious spectator with surprise, by the vast space it contains, as it is 80 feet in width, and 250 in length. Among the numerous storehouses there is . . . Number Nine, which for its wide space and elegant proportions, is scarcely to be equalled by any room of its kind; the malt-lofts are so large as to be capable of containing nearly 30,000 quarters.'

By this time the brewery surveyor had long been George Gwilt the Elder. 'At his first entrance in business'—he was born in 1746—'he had the good fortune to meet with the patronage of Mr. Thrale the brewer.'²⁰ It was to be a long association. After Thrale's death in 1781, Gwilt applied for the post of surveyor to the Merchant Taylors' Company, when Mrs. Thrale exerted herself strenuously on his behalf. 'I will add that this Gwilt,' she wrote to Sophy Streatfield, 'was dear Mr. Thrale's principal Favourite, that he served him with unwearied Fidelity, and that this Post, had it been vacant during his Patrons Life time, would have been his without our Assistance.'²¹ While Thrale lived, Gwilt must have been kept busy enough. 'Dear Mr. Thrale had a Building Fever always lurking in his Constitution,' the widow confided to her diary, ' . . . accordingly, when he died, Plans and

¹⁸ *A Journey through England and Scotland*: Glasgow, 1917, I, pp. 100-3.

¹⁹ Quoted by Concannon and Morgan, *op. cit.*

²⁰ Parentalia of George Gwilt: Surrey Records Office, Acc. 390; via Mr. L. W. Cook, ARIBA.

²¹ Do: Letter of December 2, 1781.

Elevations for New Buildings both Pleasurable and Commercial were found, of which I myself had not the smallest Idea or Expectation.'²² In 1779, when Thrale was laid low by a fit of apoplexy, she made a bold attempt to stop the latest improvements. 'In the midst of publick and private Distress, here is my mad Master going to build at the boro' house again—new Store Cellars, Casks and God knows what. I have however exerted myself & driven off his workmen with a high Hand . . . nothing but frenzy can at this Time excuse Expence to the amount of ten or twelve Thousand Pounds sure.'²³

Gwilt was certainly responsible for the alterations to Thrale's country house, Streatham Place, in 1780,²⁴ and probably for the additions in 1773 which had transformed it into the 'elegant Villa' admired by Boswell and the 'little Paradise' of Fanny Burney's *Diary*. In spite of an exigent temperament, he retained his situation at the brewery after the sale to Barclay Perkins. In 1783 the new owners asked Boulton & Watt to calculate the cost of installing a steam engine, adding that 'the inclosed Plan was drawn by our own Surveyor, who says it is the only one he can undertake to send.'²⁵ In 1798 Gwilt supplied the firm with 'a Plan of the intended New Store-house' and 'an Estimate of said Building, which may be completed for £1,350 and the Timbers and Stonework to support the Vats for £860.'²⁶ A plan of the whole brewery dated 1792-1800, was signed by George Gwilt, junior. Nothing of Gwilt's work for Thrale or Barclay seems to have survived. No buildings at the brewery earlier than 1820 escaped the fire of 1832, and Streatham Place was pulled down in 1863.

Barclay Perkins were the first brewers to make enquiries about the Boulton & Watt steam-engine, but not the first to place a firm order. Others were more easily convinced that their heavy machinery for grinding malt and pumping could be more quickly and cheaply powered by the engine than by relays of horses circling around a mill-wheel. The Boulton & Watt engine had not been capable of turning machinery until 1781, when a number of devices, including the Sun and Planet, turned its to-and-fro action into a rotary movement. Early in 1784, Henry Goodwyn, of the Red Lion Brewery, went to see the new model at Soho, and made his order on April 17. It was the first engine installed by anyone in London and that was just what Goodwyn had intended. 'It will be a great disappointment to me if the Engine is not fixed by you before any other for the Brewery Trade,' he wrote, 'should it not I acknowledge my Pride & Vanity will be much hurt.'²⁷ Fortunately, he continued to receive 'very genteel treatment'; Boulton & Watt sent detailed plans for the construction of the engine-house; and soon Goodwyn announced, 'I have parted from one half of my Mill Horses already, & in full hopes that you my Engineer will render them all needless, I am deliberating on the sale of the remainder.'²⁸ The two mechanics sent

to assemble the engine and connect it to the horse-wheel did their work so well that 'even on the first tryal of the Engine, the powers of it have exceeded my expectation';²⁹ and the engine was so much admired that it 'bids fair to obtain you many applications from the Brewery.'³⁰ So it did: though Whitbread, who installed the next engine in 1785, employed John Rennie to assemble it. Whitbread seems to have been the first man to perceive that the engine was capable of powering a machine for mixing hot water and malt in the mash tun, a task hitherto laboriously performed by sturdy Irishmen working with oars. In 1784, having heard that Watt or Boulton was coming to London, he invited them to watch the operation 'and form a perfect Idea of what is necessary if it can be accomplished.'³¹

By the turn of the century, the movement and processing of raw materials had been fully mechanized at the leading London breweries. At Whitbread's, in 1802, visitors saw 'a machine to stir up the malt, that constantly turns round, and is very ingeniously managed by means of a screw as to rise and fall alternately, so as to move alternately at the top, the middle and the bottom.'³² A Swiss scientist who had seen Whitbread's in 1786, and did not believe that any manufactory could be operated on a vaster scale, was invited by the American physicist, Count von Rumford, to visit Meux's brewery, Clerkenwell, in 1801. 'Je suis encore stupéfait,' he wrote next year, 'des choses que j'y ai vues. Ce n'est pas une maison, mais un quartier confinant à quatre rues, qu'elle occupe.'³³ A steam engine of 28 h.p. pumped water to a vast reservoir at the top of a lofty building, and moved malt to where it was needed. This must have been by means of the Archimedean screw, first applied to the transportation of solids by Oliver Evans at his Delaware mill in 1784-5. Louis Simond observed it working at Barclay Perkins in 1811: 'elevators which nobody touches carry up to the summit of the building 2,500 bushels of malt a day, thence distributed through wooden channels to the different places where the process is carried on.' (They had been installed, with mashing machines, in 1802.) He also noted that

²⁹ do. letter of August 9, 1784.

³⁰ do. letter of August 17. Orders from London brewers followed in close succession: 1784, Samuel Whitbread; 1785, Felix Calvert; 1786, Barclay Perkins; 1787, John Calvert and Combe Delafield; 1792, Gideon Combrune; 1793, Cox, Curtis & Payne; 1796, Charles Clowes; 1797, John Charrington. Truman, Hanbury held out until 1807.

Some brewers ordered engines from other makers. Thus John Elliot built an engine house and boiler room at the Stag Brewery, Pimlico, in 1797, but does not appear on the Boulton & Watt order list until 1819. Arthur Woolf was appointed engineer to Meux in 1797, when he set up a Hornblower & Maberley engine. In 1800 he installed plant for heating water by waste steam and several of his cast-iron tubular boilers. Next it seems that he added a cylinder to, i.e. compounded, a small engine made by Fenton, Murray & Wood, already at the brewery, and then proceeded to build an entirely new compound engine. (See Rhys Jenkins' article, *Trans. Newcomen Soc.*, XIII, 1934.) Unfortunately his calculations went wrong and in 1808 Meux consulted Rennie, who advised in favour of a Boulton & Watt engine, whereupon Woolf resigned.

³¹ do. letter of December 4.

³² *The Union Magazine and Imperial Register* for 1802, quoted in Whitbread's *Brewery*, 1947.

³³ Marc-Auguste Pictet, FRS: *Voyage de Trois Mois en Angleterre*, Geneva, 1802, pp. 304-7. This brewery was famous for the size of its 63 storage vats. Pictet describes the largest, built in 1795 at a cost of £10,000. It was 65 feet in diameter, 25 feet high, and held the equivalent of 20,000 barrels. As Pictet observed, this was fourteen times as much as the Great Tun of Heidelberg. A single iron hoop weighed 2 tons and 40 lb.

'the building is incombustible: walls of brick and floors of iron.'³⁴ Two years later, an encyclopaedia described how, at the leading porter breweries, the steam engine was 'applied to perform all the laborious operations without the exertions of the workmen, who are very few in number, considering the magnitude of the works.'³⁵ The brewery had acquired its economic and technical characteristic: the small amount of labour employed in proportion to the capital invested.

Outside London, industrialization had to wait upon the growth of a concentrated market, as in seaports and manufacturing towns. The first provincial brewers to order Boulton & Watt engines were Castle and Ames (Bristol), John Green (Rotherham) and Alexander Green (Nottingham)—all in 1793.³⁶ Mechanization by itself did not mean that a brewery was producing on an industrial scale, though Guinness reached the level of the middling London porter brewers in the Napoleonic Wars. Steam engines were originally installed with the intention of cutting costs, rather than of increasing output. Sometimes the horse engine, engine house and pumping machinery were on a fairly elaborate scale, as at the Royal Navy's brewery at Gosport. These had been designed and installed by John Smeaton in 1780. A smaller version followed at the Hexham Brewery, 1783.³⁷ John Patteson consulted Robert Mylne about a horse-engine for the Pockthorpe Brewery, Norwich, in 1798.³⁸ Sibbitt, Dickson & Co., at Tweedmouth, had 'an excellent set of machinery, drove by water,' for grinding malt, raising water and pumping work, in 1799.³⁹ To the present day, a 'gigantic water-wheel,' turned by the waters of the River Brit, supplies power to Palmer's Old Brewery at Bridport.⁴⁰

Some brewers in the provinces—active in other forms of commerce besides brewing—employed architects to a fairly early date. Robert Mylne designed John Patteson's house in Surrey Street, Norwich, enlarged by Soane after 1783; and Soane was engaged by W. B. Simonds, of Reading, to design a new brewhouse, store-house and dwelling-house in 1790. The working

³⁴ *Journal of a Tour in Great Britain*, 1817, II, pp. 182-4.

³⁵ *Pantologia*: article on porter. Yet even as late as 1817, the Hand in Hand Fire Office must have thought the steam engine a sort of infernal machine. In that year it added a memorandum to Whitbread's policy: 'The Process by Steam being now carried on in the Buildings insured by this Policy, the same is hereby allowed—but it is expressly declared that this office will not be answerable for any loss or damage that may happen by any Explosion occasioned therefrom. The fact is that the Boulton & Watt engines, working slowly, almost noiselessly, and under low pressure, lasted for many years. Two had a working life of more than a century. Whitbread's engine was dismantled and shipped to Sydney, NSW, in 1887, where it is preserved at the Museum of Applied Sciences. Henry Meux's engine (1810) was described, in the *Morning Advertiser* for December 22, 1913, as 'a beam engine that has been in its present position for close on a century, and that is as well able to-day to do the work which is needed as ever it was. It works all the year round, day in and day out, and is a perfect example of sound British workmanship standing the test of years.'

³⁶ Followed by J. Taylor, Liverpool, 1795; Ramsbottom & Baverstock, Windsor, and Langmead, Plymouth, 1797; Struthers, Glasgow, and Elliott, Nottingham, 1800; Guinness Dublin, 1808. (Boulton & Watt papers, Birmingham, via Mr. P. Mathias).

³⁷ See note 14

³⁸ A. E. Richardson, *Robert Mylne*, 1955, p. 175.

³⁹ J. Fuller, *History of Berwick*, 1799, pp. 382-3.

⁴⁰ *Dorset Daily Echo*, February 21, 1957.

drawings, preserved in Sir John Soane's Museum,³⁸ show that the timber beams of the brewhouse were supported by very slender columns—too slender, probably, to be anything but iron. This would seem to be a very early example of their use in an industrial building.³⁹ Two years later William & Samuel Stretton built Evans, Storer & Green's Brewery at Nottingham, and in 1794–5 William Stretton designed Alexander Green's brewery at Butcher's Close, in the suburbs of the same city.⁴⁰ Many of these country breweries must have vanished without trace, by rebuilding, demolition or conversion to other uses. Three only seem to have survived from the period in almost mint condition, and of one the architect's name is known, since he had the prescience to inscribe it on a date stone. Cobb's Brewery, Margate, 1807–8, was designed for Francis Cobb, Jun., by William Teanby:

This magnificent structure, which is said to have cost the sum of 60,000*l.*, is 179 ft. long, and 43 ft. broad; the height of the centre of the brewhouse 43 ft., and that of the wings 51. A turret, 11 ft. in diameter, and 10 ft. 6 in. high, arises from each of the wings, surmounted by a vane 7 ft. above the roof of the turret, making the whole height, from the pavement to the roof, 75 ft.⁴¹

Simpson's Brewery, Baldock, has a façade of five bays with lower detached side buildings, together with a five-bay, three-storey chequer brick dwelling-house.⁴² Elgood's North Brink Brewery, Wisbech, 'a fine example of that industrial functionalism of the early nineteenth century which yet paid tribute to the decencies of architectural taste in its controlled proportions, its pedimented roof-lines and its key-stoned entrance archway'⁴³—is almost a copybook Georgian brewery, with its brewhouse, brewery house, head brewer's house, servants' house, stables and paddock, covering six acres.⁴⁴

The London brewers were 'handsome patrons of architecture'⁴⁵ and even as early as the first decade of the nineteenth century. Some architects had already begun to specialize as industrial consultants: George Saunders, for example, who rebuilt the Stag Brewery, Pimlico, for John Elliott, 1796–1807.⁴⁶ The building had five storeys and occupied a site 165 ft. square. (In 1860 it was converted into a malt store and internally rebuilt, though the shell and much of the original timber

roof remain.) Some contemporaries of Saunders exhibited elevations of breweries at the Royal Academy: W. R. Laxton, 'Meux & Co.'s Brewery, Liqueurpond Street, 1800; George Byfield (a specialist in building gaols), 'A Brewery now building at Knightsbridge' (possibly the Cannon, for Goding & Co.), 1804; T. Hatton, the Public Subscription Brewery, Weston Street, Southwark, 1809; Laxton again, 'The Mary Brewery, Mary Street, built for Mr. J. Raymond' and the 'Union Brewery, Wapping, as rebuilt for Mr. R. Bowman,' both 1810.⁴⁷ Thus Laxton, if he was responsible for the designs, had three breweries to his credit. This suggests a specialist: and indeed J. C. Loudon's *Cyclopaedia* of 1833 mentions a Mr. Laxton 'who has had great experience in fitting up public houses.' One of Soane's pupils was certainly a brewer's architect at a later date. Francis Edwards, who was also architect to the Imperial Gas Company, built additions to the Cannon Brewery, Knightsbridge, for T. Goding, c. 1835; additions to the Lion Brewery, Broad Street, Golden Square, for Goding & Broadwood, date unknown; and his most ambitious venture, the Lion Brewery, Lambeth, designed for Goding & Co., 1836. This had a riverside frontage of five storeys, with Roman Doric columns supporting an entablature, topped by the figure of a lion in Coade stone.⁴⁸ It was a forerunner of the Ornamental Brewery of the Victorian period.

It was also the last of the early architect-designed breweries of London to survive intact. After the first big brewery amalgamation—Watney Combe Reid in 1898—Combe's was converted into warehouses, and Reid's (the original Meux brewery) was replaced by the L.C.C.'s Bourne Estate. The second Meux brewery followed in 1922⁴⁹ and the Golden Square brewery c. 1928. The Red Lion Brewery in St. Katharine's Way, reputedly founded in 1492, went in 1933, when Hoare & Co. amalgamated with Charrington's. An LCC tenement, Matilda House, stands on its site. The City of London Brewery in Upper Thames Street, formerly Calvert's and possibly founded in 1580, ceased production in 1923 and was obliterated in the air raids of 1941–2. The Lion Brewery in Lambeth stood derelict from 1924 until 1949, when it was demolished to make way for the Royal Festival Hall.⁵⁰ Only at Barclay's and at Truman's (where the double frontage on Brick Lane still looks very much like John Moore's aquatint of 1842) does much from the early nineteenth century survive. The Georgian brewery is going the way of the quagga and the great auk.

The brewery houses have fared better. In their case, the sentimental attachment was greater, for here the founder's family had lived for generations; and even when the brewery passed into other hands, the dwelling-house could be adapted

as offices or sold for private occupation. At Chiswell Street and at St. James's Gate the houses taken over by Samuel Whitbread⁵¹ and Arthur Guinness are still intact after two centuries; and at Truman's, in Brick Lane, Gainsborough's⁵² powerful portrait of Sir Benjamin Truman hangs in a house that the sitter would still recognize.⁵³ Barclay Perkins replaced the Thrale dwelling-house, burned down in 1832, by Anchor Terrace in Southwark Bridge Road, 1834. Of the houses outside London, some are more stately and spacious than the brewery's trade could have warranted in the eighteenth century. Usually the explanation is that the owners were versatile capitalists. Some thirty families had one foot in brewing and one in banking, like the Lacons of Yarmouth, the Cobbs of Margate, the Simonds of Reading, the Worthingtons of Burton.⁵⁴ The Cobbolds of Ipswich, also bankers, had 'in addition to the brewery a most extensive trade in corn,' with their own wharves, granaries, warehouses, ship-building yards and a fleet sailing regularly to China and India.⁵⁵ The Palmers, besides brewing and tallow-chandling, ran theatres at Bath and Bristol. John Palmer invented the mail-coach service and built Bath's Theatre Royal to the designs of the younger Dance. Thanks to their multiple business activities, a fair number of country brewers were able to live in the manner Horace Walpole prescribed as befitting a gentleman: 'handsomely but without ostentation.' Hence such large and graceful brewery houses as Benskin's in Watford, Ramsbottom's in Thames Street, Windsor (now Courage's district offices), Simpson's at Baldock. There are many smaller versions: at the Lockwood Brewery, Huddersfield; Rigden's, in Court Street, Faversham, used as Fremli's district office; the Wilson and Allsopp house in Horninglow Street, Burton, still used by the successor firm, Ind, Coope & Allsopp; Brakspear's at Henley; Whitwell Mark's at Kendal, and the charming Roberts & Wilson house at Ivinghoe, now adapted to the Spartan purposes of a youth hostel. Enough remain to serve as illustrations 'of that culture that enabled the successful farmers, merchants, brewers and provincial gentlemen to build on a fundamentally commercial framework a community with mature sophisticated taste. It would take a history of eighteenth-century civilization . . . to explain it fully, but some indication may be found in the unity . . . that allowed each element in the local life its due proportion of emphasis and expression, producing a microcosm of the balanced community.'⁵⁶

³⁸ I am grateful to Miss Dorothy Stroud for bringing them to my attention. She also supplied the information about Patten's house.

³⁹ I thank Professor A. W. Skempton for this suggestion. The plans are dated March 17, 1790.

⁴⁰ H. M. Colvin, *Biographical Dictionary of English Architects: Records of the Borough of Nottingham, VIII*, p. 283.

⁴¹ W. C. Oulton, *Picture of Margate*, 1820, pp. 68–9. The dates, which conflict with Mr. Colvin's, are quoted from Francis Cobb's diary in an article by G. E. Clarke, *Isle of Thanet Gazette*, April 18, 1957. They are confirmed by the architect's date-stone on the building.

⁴² N. Pevsner, *The Buildings of England: Hertfordshire*, p. 49.

⁴³ J. M. Richards, *Wisbech*, AR December, 1939. Ledgers in the company's possession show that the brewery was there in 1795, as Watson & Uall's.

⁴⁴ Information from Mr. W. S. Elgood.

⁴⁵ John Summerson, *Georgian London*, p. 253.

⁴⁶ This is a new attribution. The source is the album of thirty plans and elevations prepared for Saunders by his clients, held by Watney, Combe, Reid. The signed introduction is concerned mostly with the difficulties of building a foundation on the marshy soil.

⁴⁷ Colvin, *op. cit.*; A. Graves, *Catalogues of the Royal Academy*; checked against the original RA catalogues; Broadley-Bullock Collection at Whitbread's Brewery.

⁴⁸ There is an early account in Bell's *Life in London and Sporting Chronicle*, November 13, 1836, and a detailed architectural description in the South Bank volume of the *Survey of London*.

⁴⁹ To be replaced by the Dominion Cinema and the premises of Messrs. Montagu Burton. 'The dirty brick buildings are frankly hideous,' the *Daily Telegraph* wrote on April 13, 'architecturally London loses nothing.'

⁵⁰ The lion on the roof, modelled by W. F. Woodington, 1837, and long a Thames-side landmark, was preserved at the suggestion of King George VI (*The Times*, November 17, 1948). It stands at the York Road entrance to Waterloo Station.

⁵¹ No account of the brewers' patronage of architecture would be complete without a reference to Samuel Whitbread II. He engaged Henry Holland to rebuild Southill in Bedfordshire, bought by his father from Lord Torrington, and gave Benjamin Wyatt his first big commission, Drury Lane Theatre.

⁵² Gainsborough also painted Samuel Whitbread II. Reynolds painted both Whitbreads, and executed twelve portraits of Henry Thrale and his eminent friends, including Dr. Johnson, for the library at Streatham. Lawrence painted James Curtis; Romney, Whitbread's three chief clerks.

⁵³ 'Inside, the upper floor has ceilings and fittings of admirable quality, especially in the Board Room and the passage leading to it; they are in the style of 1750, with curving leafy patterns in white plaster, and detail that is still opulently Roman. There is furniture contemporary with this interior and in many cases specially made to fit its recesses: in short, the eighteenth century character of the house has been preserved with unusual completeness.' (Millicent Rose, *The East End of London*, 1950, pp. 46–48.)

⁵⁴ Information from Mr. P. Mathias.

⁵⁵ G. R. Clarke, *History of Ipswich*, 1830, pp. 367–8.

⁵⁶ J. M. Richards, article cited.

UNIVERSITY & POLYTECHNIC, RANGOON

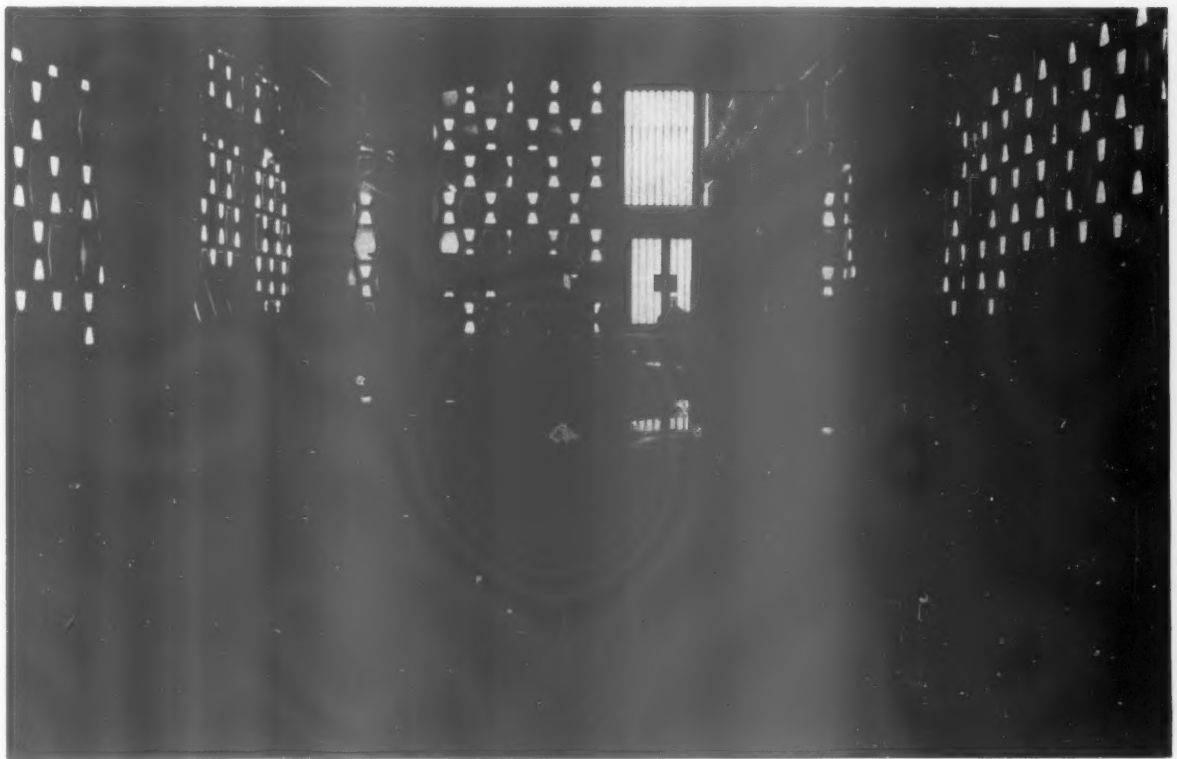
ARCHITECTS

project manager, Rangoon
resident structural engineer

RAGLAN SQUIRE & PARTNERS

F. R. G. Pitcher
John Gurney

1. students' common room on the first floor of the library and administration building, seen from the main staircase. On either side are space-framed metal lighting troughs, containing fluorescent tubes.

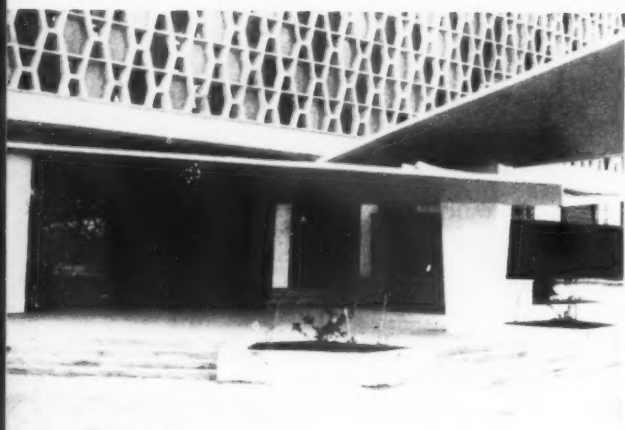


1

planning Strong sun, heavy rainfall and high humidity were the three determining factors in basic planning. Protection from the sun was found to be an inherent part of over-all site planning in order to provide the maximum of shaded areas and surfaces as the starting point of successful sun control. Hence the detailed requirements were broken down into a series of cellular strips, each being one room deep, and served by open circulation galleries on one side. These planning strips were in effect a development of the traditional tropical bungalow, a plan-form which provides maximum cross-

ventilation and protection from sun and monsoon rains. Staircases are at frequent intervals along the galleries.

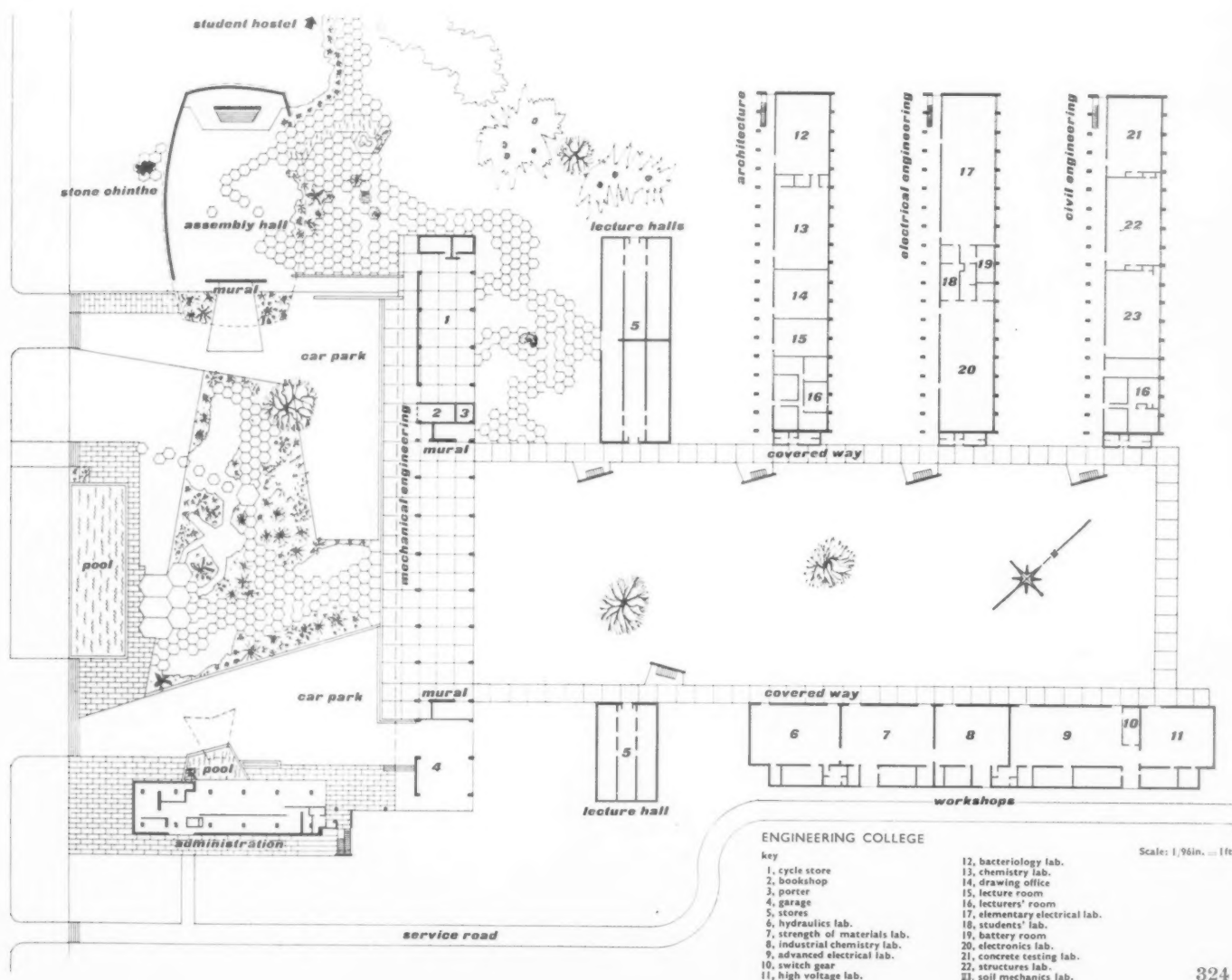
space and scale A climate as hot and humid as Burma demands that the spaces composing a building, or separating one building from another, shall in fact be larger than for similar buildings in Europe; and that such spaces shall appear to be even greater than they are. The grand scale of the tropical background demands a proportionate scale in architecture: at the same time, this must be related to the human being.



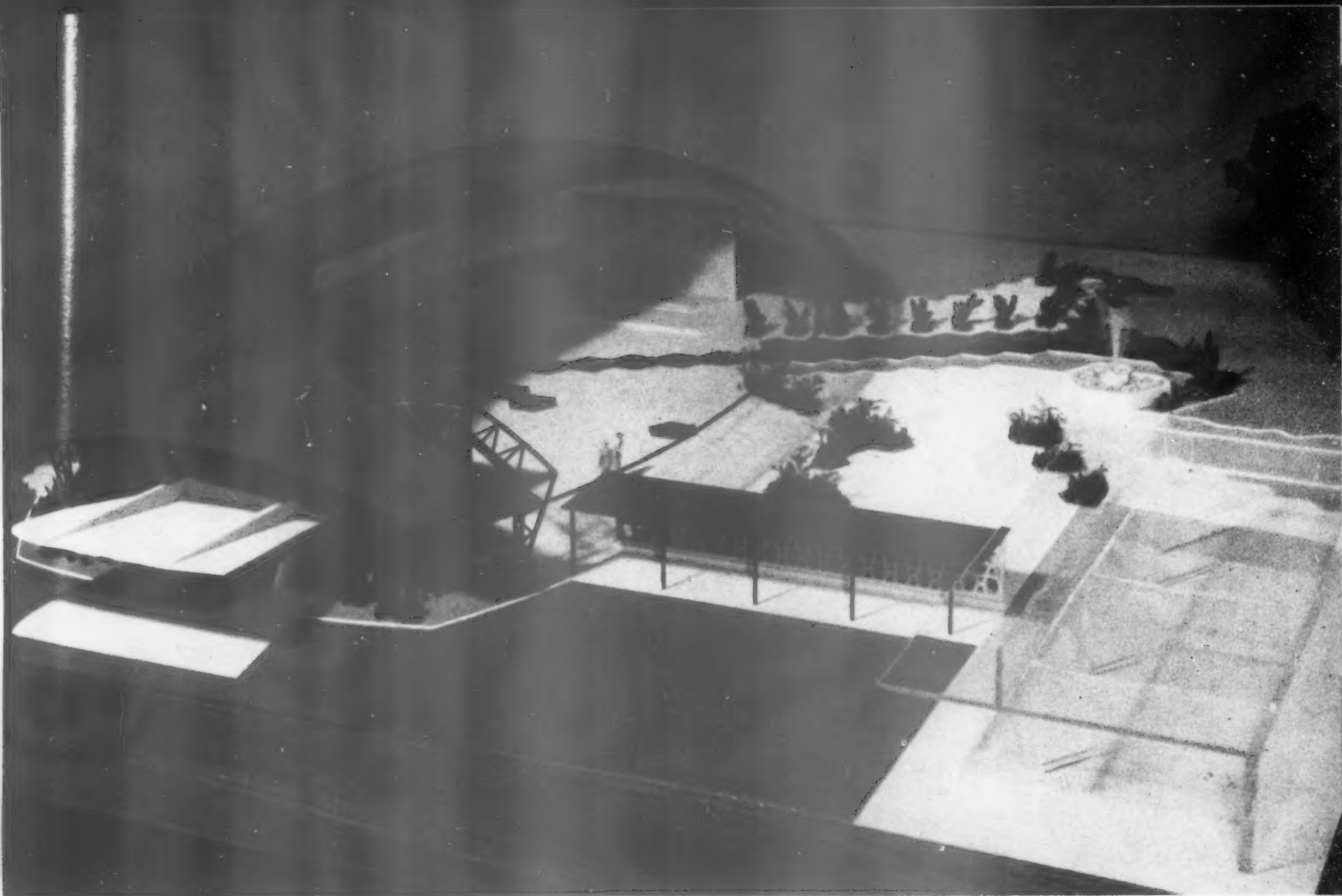
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Engineering College The conception of the Engineering College was basically that of two inter-locked courtyards, separated only at high level by the largest single teaching element—a three-storey building carried on pilotis and spanning across the site. The outer courtyard comprises an entrance complex of three elements: the Mechanical Engineering block (spanning across the site), the Assembly Hall and the Library and Administration building—a dome and its foil, a tall rectangular block, linked together by a long low building. A long pool, designed to catch the reflections of the Library building, forms the main frontal boundary of the site, and is surrounded by random hexagonal slabs and areas of planting. The teaching elements of the College are grouped round the inner courtyard.

2. entrance to the library and administration. A coloured glass screen is set back from the columns on the ground floor, and administration rooms are inside. 3. entrance side of the assembly hall, in model form. 4. the interior of the hall, looking towards the stage. The hexagonal paving stones are concrete; some are finished in black and dark red hardening. Behind the stage is a plastered and painted brick screen wall, with a low random stone wall to the rear of that; the roof support is a welded tubular metal portal frame.



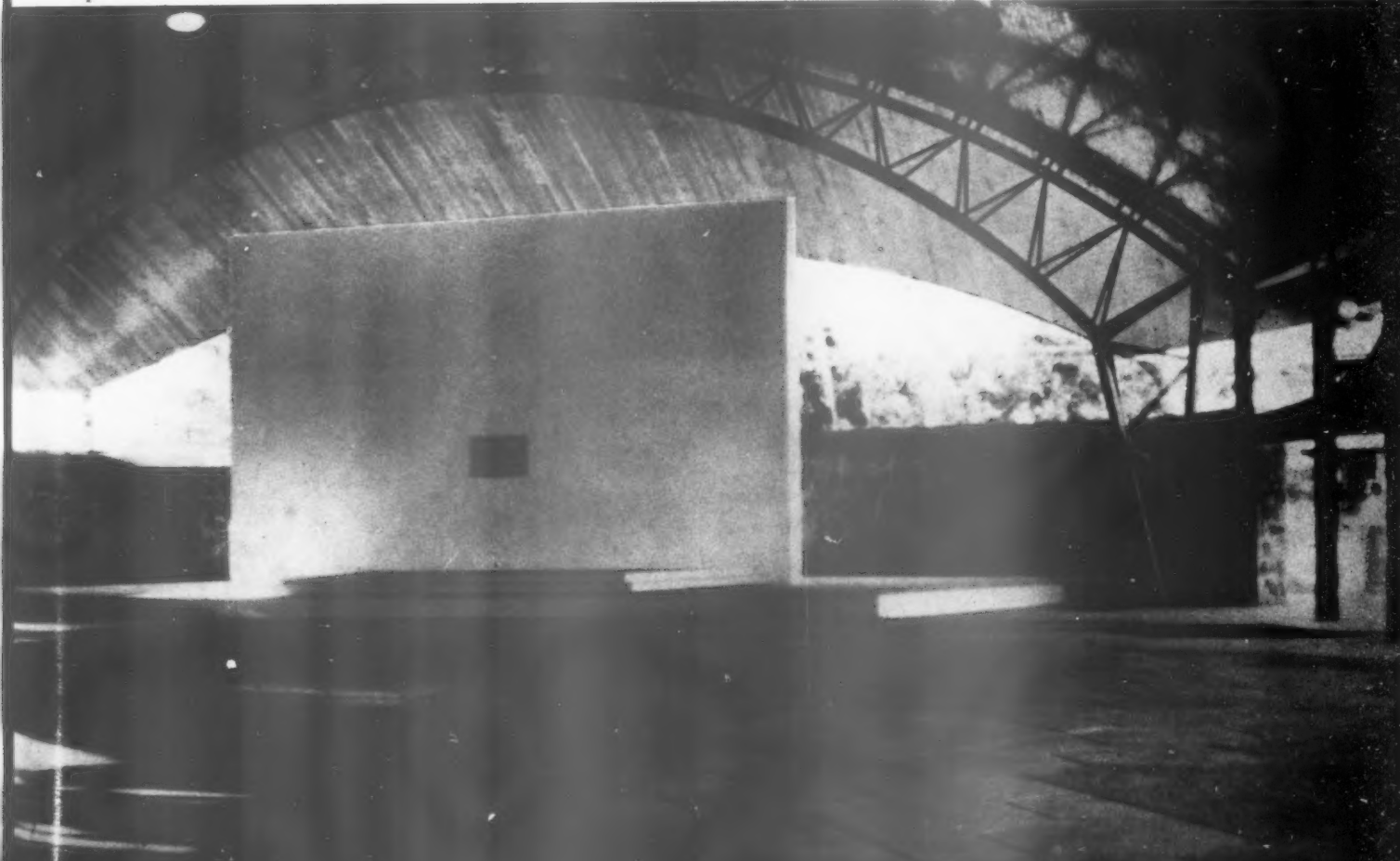
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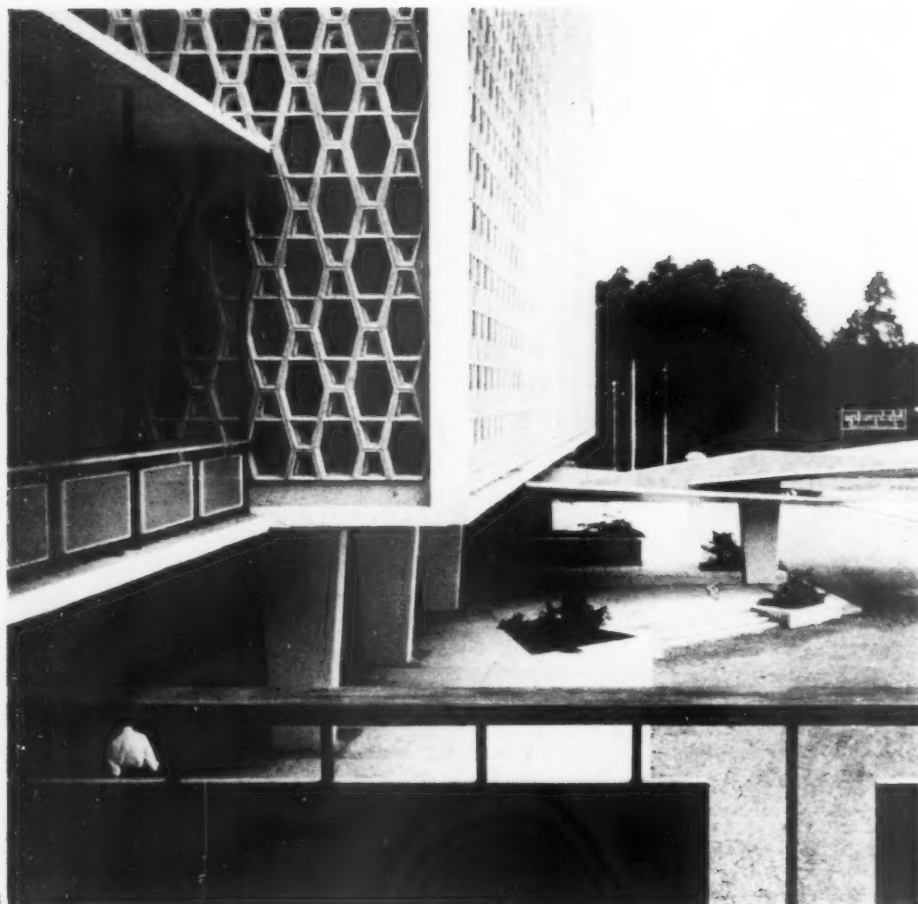


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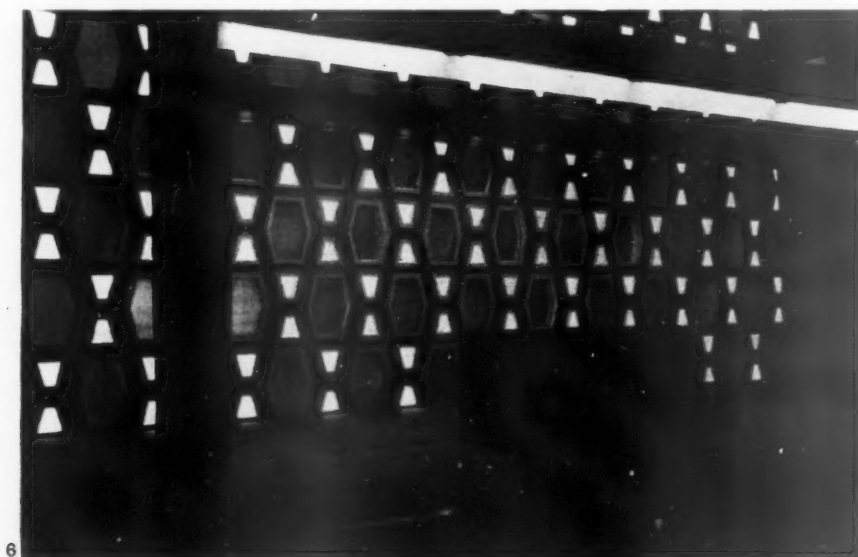
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sun control Designing in the tropics is to a very large degree influenced by giving protection from the sun. Several methods of sun control were adopted. The traditional method of the open unglazed grille for unenclosed areas and the deep glazed grille for enclosed areas which was adopted for the Library and Administration building: the larger openings are filled with coloured sun-diffusing plyglass, and the smaller openings with plain glass louvres to permit cross ventilation. Slatted and

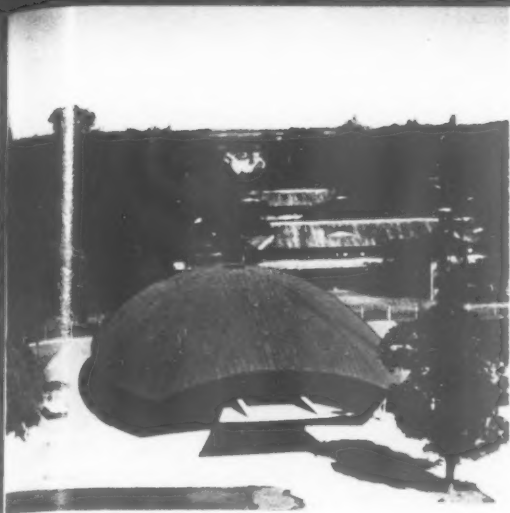
louvred screens were another method; also, placing a solid in the middle of a large opening, the surrounding areas being filled with fixed glass and glass louvres. All these methods cast shadows on the floor within, thus cooling the interiors.

materials Local materials available were brick, timber (teak, padauk and bamboo), stone (taurgyi granite), laterite and sand. To these were added a minimum of

5. library and administration building from the first floor balcony of the mechanical engineering block, showing the car canopy. 6. interior of the students' common room; columns are naked shuttered concrete.



6



7

7, the assembly hall from the roof of the library building; in the background is an existing students' hostel. 8, the mechanical engineering building, looking from the south-west towards the main courtyard that joins all the main teaching elements of the college. A sun screen of vertical steel rods is suspended from the canopy of the balcony, threaded with short lengths of horizontal timber slats.

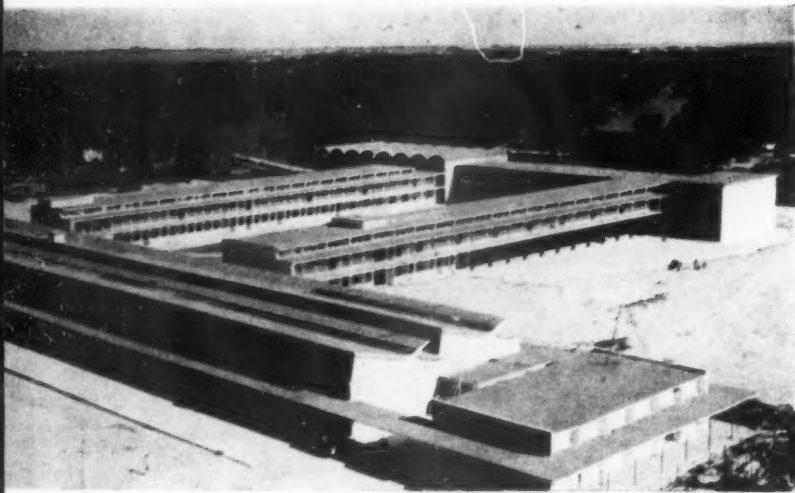
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imported materials, including cement, steel, marble, glass, synthetic boards, roofing felts, copper, adhesives and paints. The policy governing the use of materials was controlled by economy in sterling expenditure; speed in erection of a large part of the five projects; and need to provide a wide variety of techniques as experience to local labour and examples to students. Local materials were mainly used in a strictly traditional way—laterite for hardcore and bricks and stone for walls and piers. The exception was the Engineering College Assembly Hall where modern laminating techniques were applied to teak. Imported materials were used partly to complement local materials used traditionally, floor beams, slabs, etc., and partly in their own right, using the full range of advanced techniques, pre-cast elements, shells and large cantilevers, etc.

Assistant designer for the Library and Administration Building and the Assembly Hall was R. B. Roberts; engineer designer, F. Lefevre. Assistant site architect for the rest of the Engineering College, Brian C. Adams; consulting engineer (Assembly Hall only), Ove Arup and Partners.



8



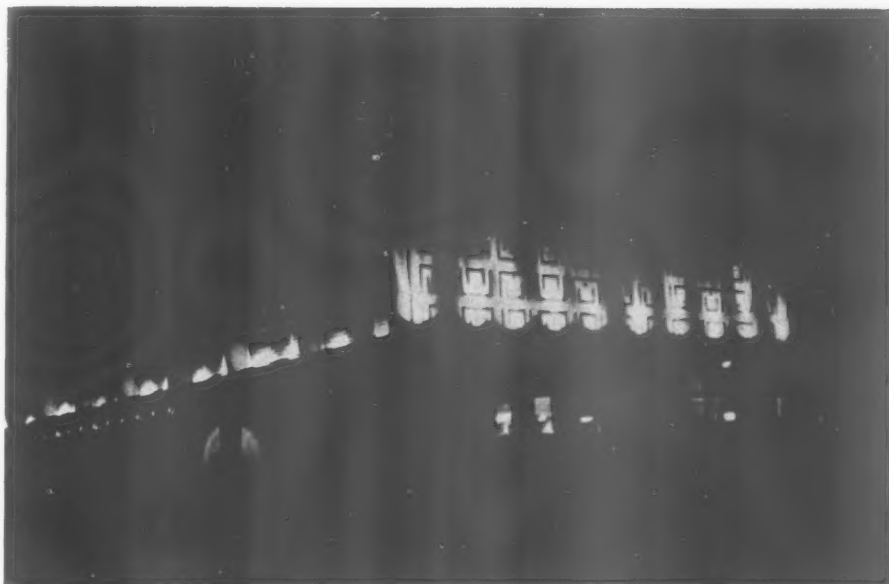
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9. general north-west view of the Polytechnic from the students' hostel which is on higher ground; the courtyard principle of planning can be seen. In the far corner is the main assembly hall.
10. students' hostel block: under the canopy is an open-air dining porch where tables can be laid; the main dining area with collapsible screens being just behind it. Above are the access galleries to the living quarters.

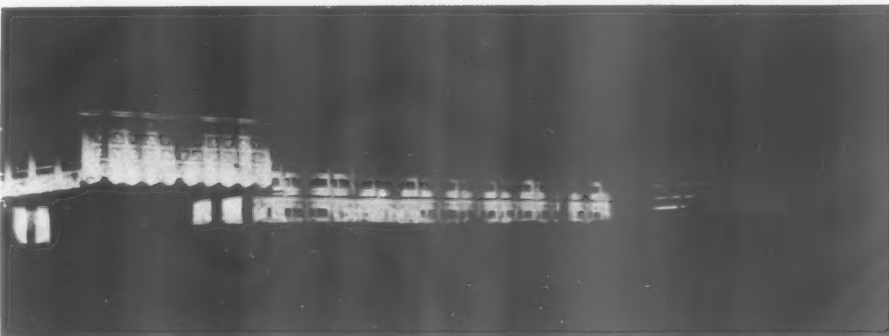
Polytechnic Institute A further group consists of a Polytechnic Institute, hostels for students and an eight-storey block of flats, with a possible future extension to the scheme of a State High School. Only four isolated islands of ground on the site proved suitable for this project. The large central island was selected for the Polytechnic, two smaller ones for the hostel block and flats, while the fourth was reserved for the future High School. Both the Polytechnic and High School were composed of strip blocks placed parallel to the sides of rectangular courtyards. The hostel block was a simple strip plan, with deep overhanging access balconies. The flats were contained in a group of three tower blocks linked together by galleries, staircases and lifts. Assistant architect for the hostels and flats was Peter Winther; site architect, D. H. Thorne.



11



12

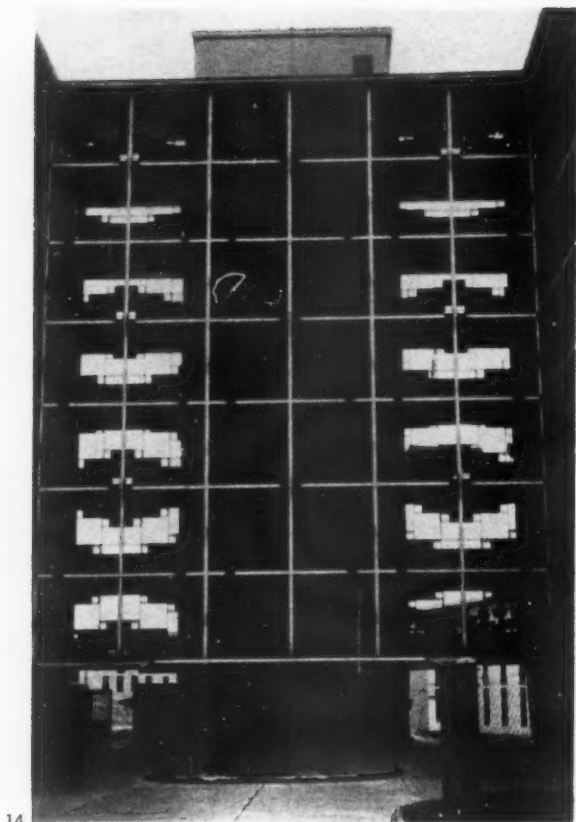


13



11. night shot of the assembly hall, and 12. the same with the classroom block in the background. 13. the barrel-vaulted assembly hall seen from a public road; in the centre of the glazing are flat mosaic panels, intended to eliminate sun glare. Under are glass louvres and on the ground floor level the pierced wall of the canteen.

sculpture and murals The fundamental belief behind the designs of both the Polytechnic and the Engineering College was that valid architecture in Burma could not be achieved by introducing preconceived æsthetic concepts appropriate to the climatic and social background of Europe. Hence the murals and sculpture, like the architecture, grow from the native background. Accordingly, Burmese artists designed murals and sculpture for both projects.

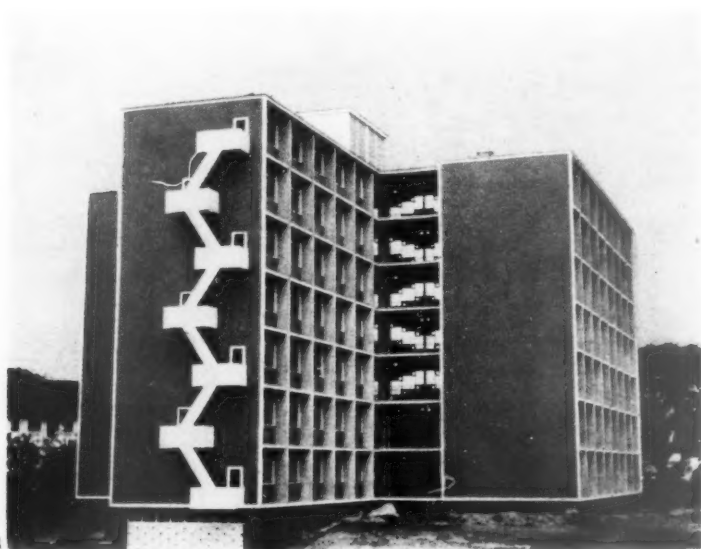


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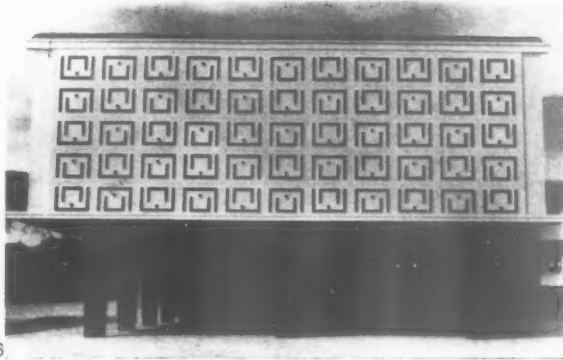
colour and texture An attempt has been made in both the Engineering College and the Polytechnic to produce a synthesis of texture and colour within the context of sun and shadow. The diagonal concrete grille to the Library and Administration building provides a three-dimensional textured pattern to contain pieces of

coloured glass. The coloured glass is set back from the face of the grille, partly for protection, and partly to create depth, emphasized by the deep shadows. Internally, the effect of sunlight striking the grille and coloured glass produces a soft translucent light with a constantly changing shadow pattern on the floors.

14. teachers' flats, a three-wing point block: a coloured glass screen covers the vertical and horizontal circulation; 15. the same building seen from the north-west. The solid walls are painted concrete; on the near end wall is a fire escape.

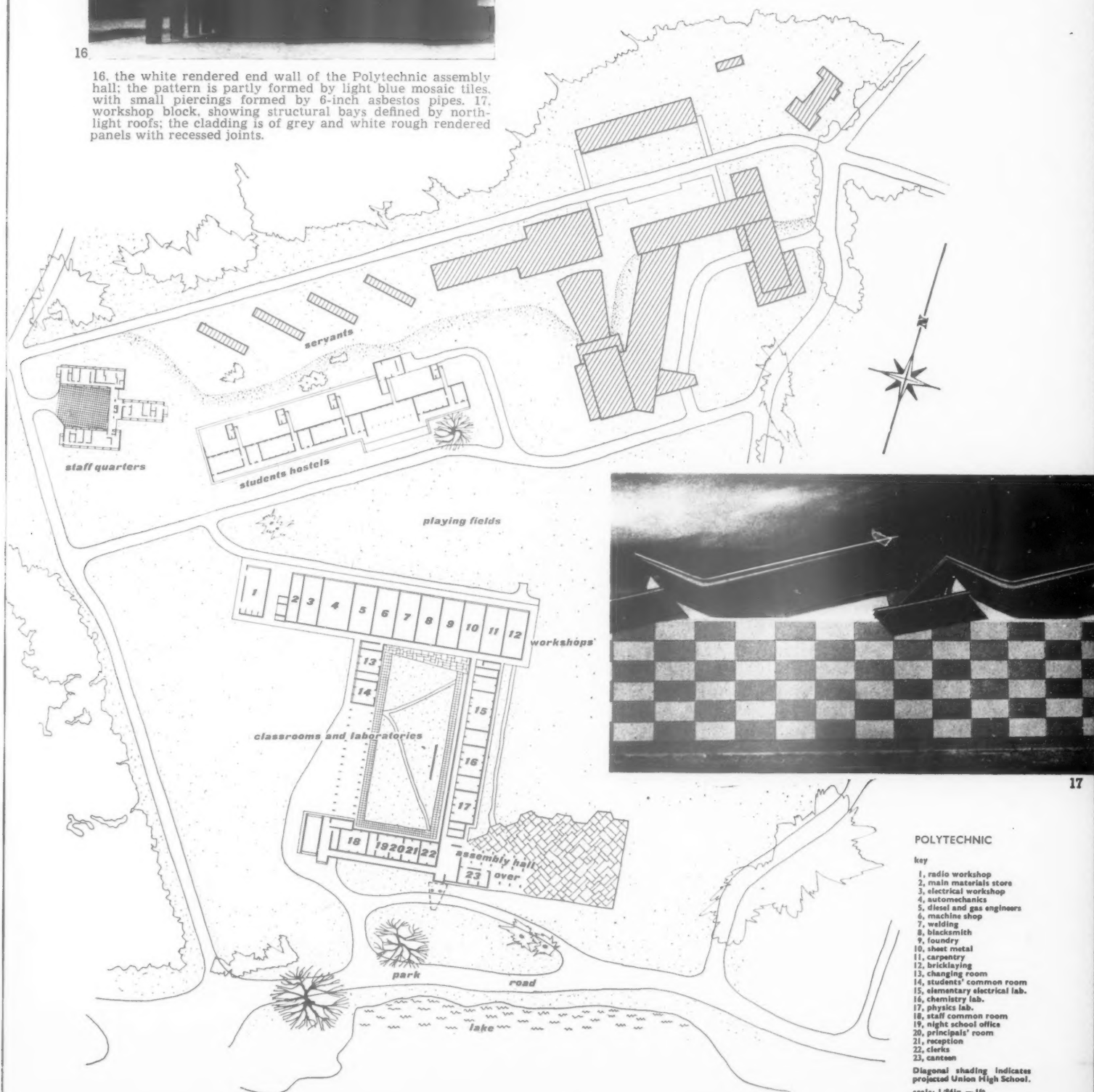


15



16

16. the white rendered end wall of the Polytechnic assembly hall; the pattern is partly formed by light blue mosaic tiles, with small piercings formed by 6-inch asbestos pipes. 17. workshop block, showing structural bays defined by north-light roofs; the cladding is of grey and white rough rendered panels with recessed joints.



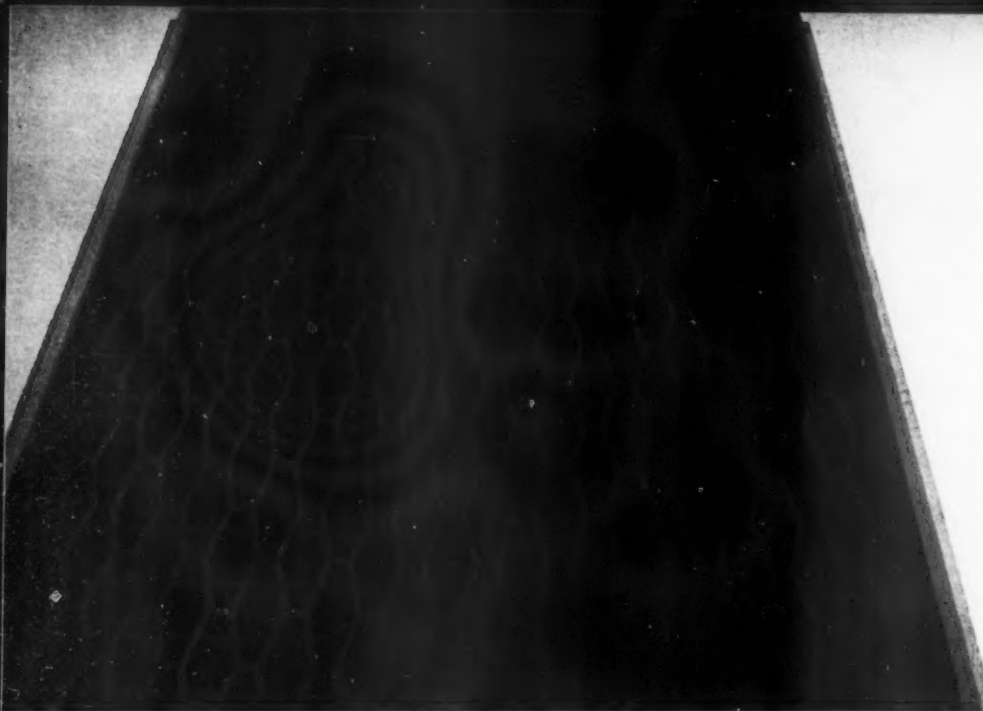
17

POLYTECHNIC

key

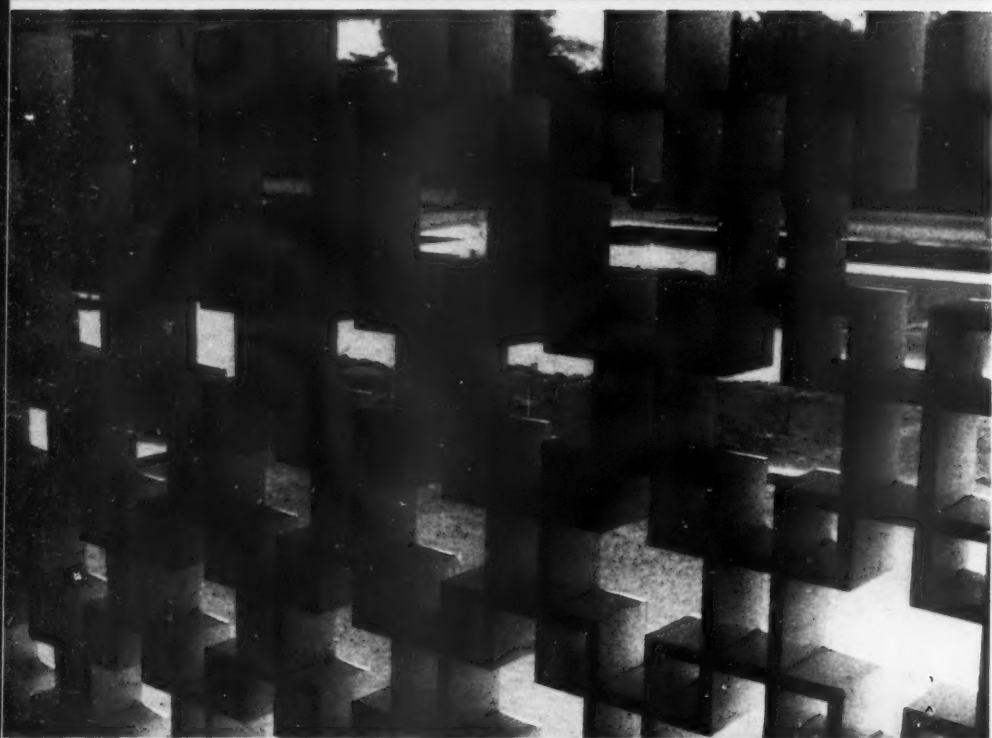
- 1, radio workshop
- 2, main materials store
- 3, electrical workshop
- 4, automechanics
- 5, diesel and gas engineers
- 6, machine shop
- 7, welding
- 8, blacksmith
- 9, foundry
- 10, sheet metal
- 11, carpentry
- 12, bricklaying
- 13, changing room
- 14, students' common room
- 15, elementary electrical lab.
- 16, chemistry lab.
- 17, physics lab.
- 18, staff common room
- 19, night school office
- 20, principals' room
- 21, reception
- 22, clerks
- 23, canteen

Diagonal shading indicates projected Union High School.
scale: 1/96in. = 1ft.

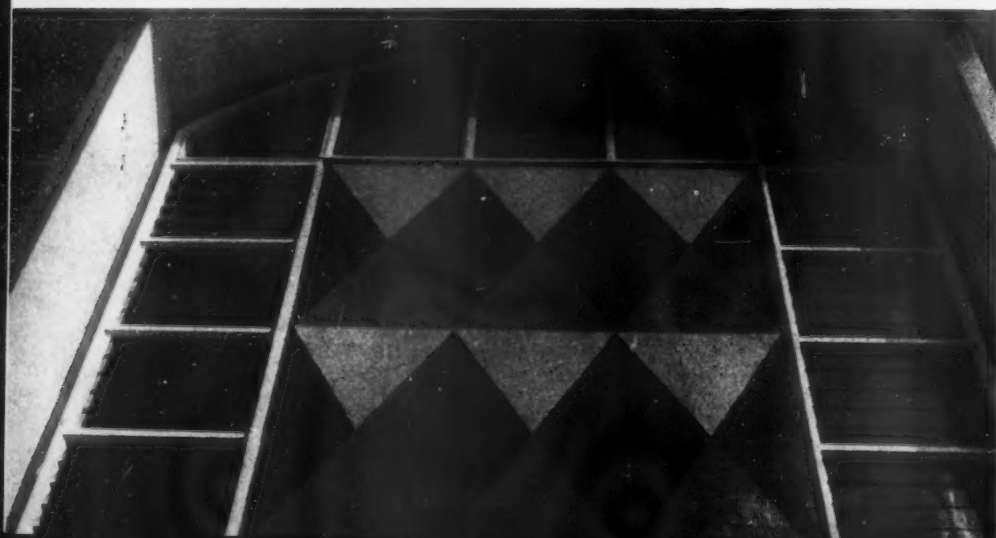


UNIVERSITY & POLYTECHNIC, RANGOON

18



19



20

18. end wall of the library and administration block of the Engineering College: a concrete-framed viewing slit is formed on the terrace to the board room, on the top floor. The grille consists of coffin-shaped precast units, 10" deep and 5' high, with splayed aides; the large hexagons are filled with fixed coloured ply-glass, the small openings with glass louvers, for cross ventilation. 19. open teak grille, of boxes notched and glued together, over the balcony of the mechanical engineering building. 20. mosaic panel in the glazing of the Polytechnic assembly hall.

CLUSTER CITY

A NEW SHAPE FOR THE COMMUNITY

Throughout the last quarter of the present century, from its first congress at La Sarraz in 1928 to its virtual dissolution last year, the Congrès Internationaux d'Architecture Moderne (CIAM) has brought together the masters of Functionalist Architecture—Le Corbusier, Gropius, van Eesteren and many others—in discussions on the problems of their art, and of city planning in particular. Their findings, formulated in methodically drawn up documents, the most notable being the Athens Charter of 1933, now begin to appear too diagrammatic, formalistic and legalistic, and here, Alison and Peter Smithson, who have participated in much of CIAM's post-war activity, set out a case for rephrasing CIAM's functionalist tenets on a more humane and pragmatic basis.

The modern architect is interested in the implications of his building in the community and in the culture as a whole. His first concern is with the general problem, from which the specific solution in the particular situation is evolved. The Declaration of the first Congress for Modern Architecture (CIAM) in 1928, was concerned not only with the throwing over of outmoded formulas and the Academies, but with the actual functional basis of the new architecture with economics, with the rationalization of building, and also with town planning, for the Functional City was the natural extension of a Functional Architecture.

The situation for the modern architect today is fundamentally the same, we are still functionalists and we still accept the responsibility for the community as a whole, but today the word functional does not merely mean mechanical, as it did thirty years ago. Our functionalism means accepting the realities of the situation, with all their contradictions and confusions, and trying to do something with them. In consequence we have to create an architecture and a town planning which—through built form—can make meaningful the change, the growth, the flow, the *vitality* of the community.

There must be inherent in the organization of every building the renewal of the whole community struc-

Poussin's vision of the classical city is an image of a consistent hierarchy of building forms, that runs from the high temple on the hill to the local temple and the private buildings around it. Can modern architects create an equally convincing image of a city, without being caught in some similar closed hierarchy?

ture. Take, for example, the problem of rebuilding three houses in an existing street; the houses on each side of the street form with the street itself a distinct urban idea; the three new houses should not just live-off this old idea, but should give an indication, a sign, of a new sort of community structure. But this cannot be done unless the architect has a more or less completely conceived general idea or ideal towards which all his work is aimed.

It is now obvious that the functional-mechanical concept of town planning and the Cartesian aesthetics of the old Modern Architecture are no longer relevant. Le Corbusier's dream of a Ville Radieuse was supported by a geometry of crushing banality. For that is how we see it now—the plans move us as little as the pattern on the table cloth at the Vieux Paris, 2, which is indeed where it may have originated. (How different are our reactions to the same image! His sparking point, excitement; ours, art-historical curiosity.)

Yet the dream was real enough and is still relevant.

'Here we have a promenade for pedestrians rising on a gentle ramp to first floor level which stretches before us as a kilometre flight of terrace. It is flanked by cafés embowered in tree tops that overlook the ground beneath. Another ramp takes us to a second promenade two storeys above the first. On one side of it is a Rue de la Paix of the smartest shops; the other commands an uninterrupted view of the city's limits. Yet a third ramp leads to the esplanade along which the clubs and restaurants are grouped. We are sheer above the expanse of parks with a tossing sea of verdure plumb beneath us. And to the right and left, over there, and further away still, those gigantic and majestic prisms of purest transparency rear their heads one upon another in a dazzling spectacle of grandeur, serenity, and gladness. . . .

'Those hanging gardens of Semiramis, the triple tiers of terraces, are "streets of quietitude." Their delicate horizontal lines span the intervals between the huge vertical towers of glass, binding them together with an attenuated web. . . . That stupendous colonnade which disappears into the horizon as a vanishing thread is an elevated one-way *autostrada* on which cars cross Paris at lightning speed. . . . When night intervened the passage of cars along the *autostrada* traces luminous tracks that are like the trails of meteors flashing across the summer heavens.'

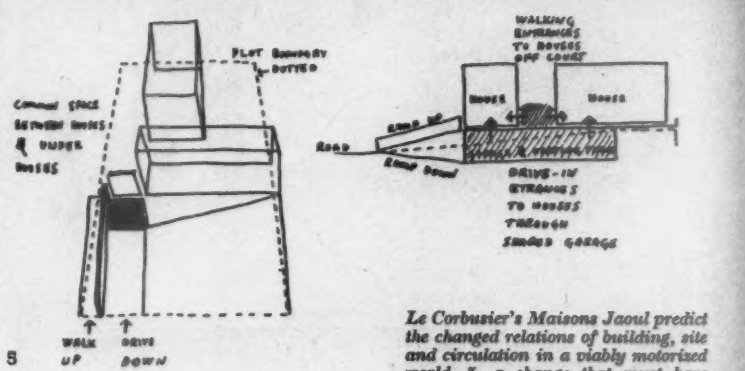
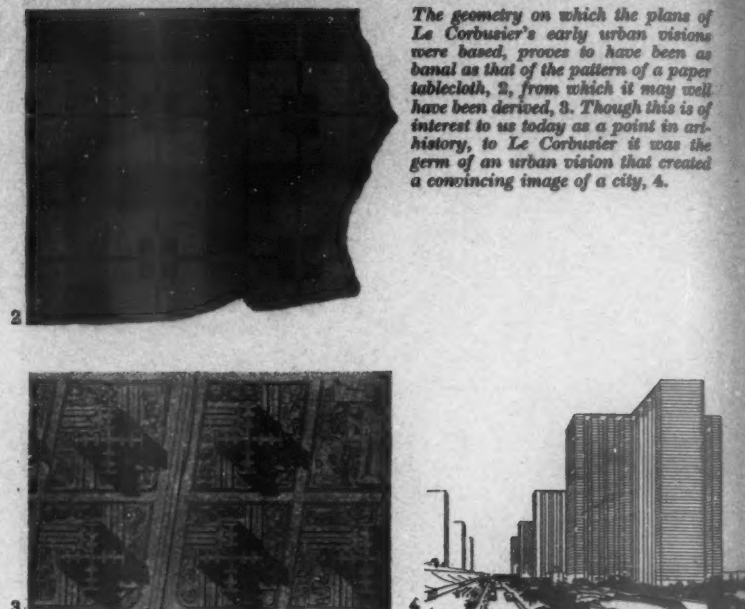
This quotation is from a piece called 'The Street' which originally appeared in *L'Intransigeant* in May, 1929. It is a description of the Plan Voisin, a project of 1925 which applied the principles and building types of Le Corbusier's earlier project Une Ville Contemporaine (1922) to Paris.

We still respond to this dream but we no longer believe in the means by which he imagined it could be achieved. His city is a colossal, axially organized, chess board.

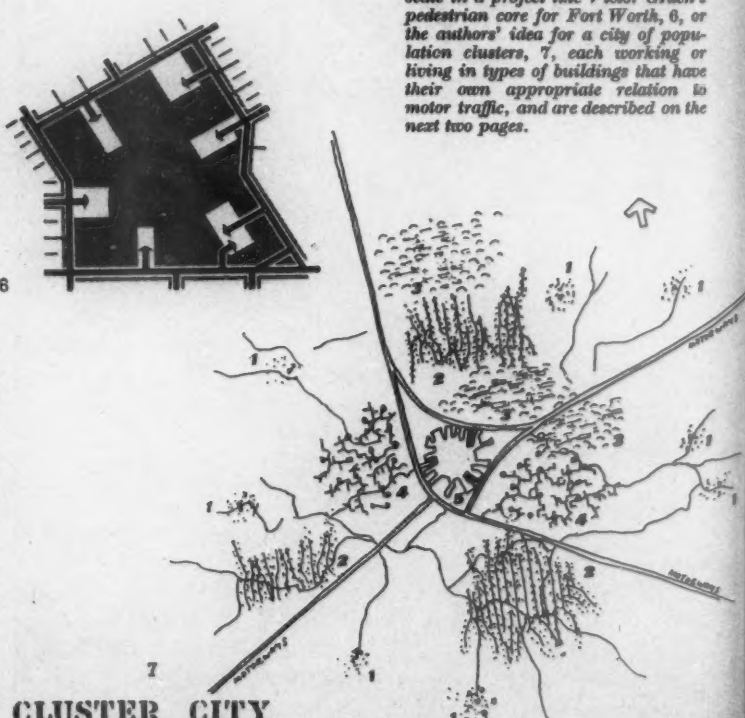
What we are after is something more complex, and less geometric. We are more concerned with 'flow' than with 'measure.'

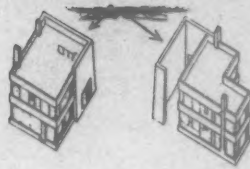
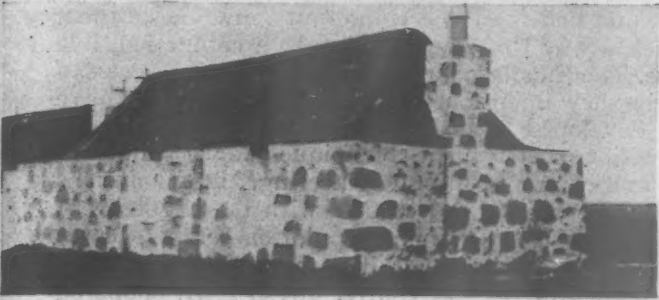
The general idea which fulfils these requirements is the concept of the Cluster. The Cluster—a close knit, complicated, often moving aggregation, but an aggrega-

The geometry on which the plans of Le Corbusier's early urban visions were based, proves to have been as banal as that of the pattern of a paper tablecloth, 2, from which it may well have been derived, 3. Though this is of interest to us today as a point in art-history, to Le Corbusier it was the germ of an urban vision that created a convincing image of a city, 4.

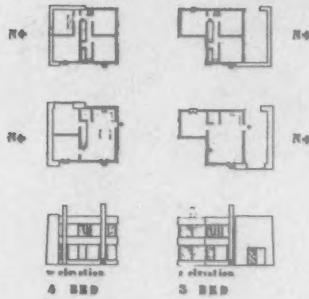


Le Corbusier's Maisons Jaoul predict the changed relations of building, site and circulation in a viably motorized world, 5, a change that must have architectural consequences on a civic scale in a project like Victor Gruen's pedestrian core for Fort Worth, 6, or the authors' idea for a city of population clusters, 7, each working or living in types of buildings that have their own appropriate relation to motor traffic, and are described on the next two pages.





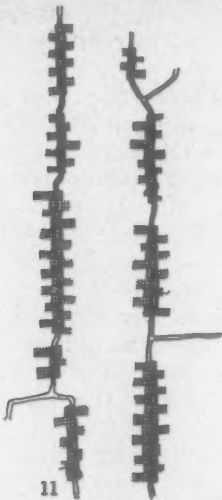
Fold-houses for village infill and extension, 10, though they vary within reasonable village limits in size and accommodation, bring order into diversity by their reliance not only on standard details, but also on a standard major structural unit, the folded slab of walling, 9, that gives the same diffused unity as the walling of crofter houses in Tiree, 8.



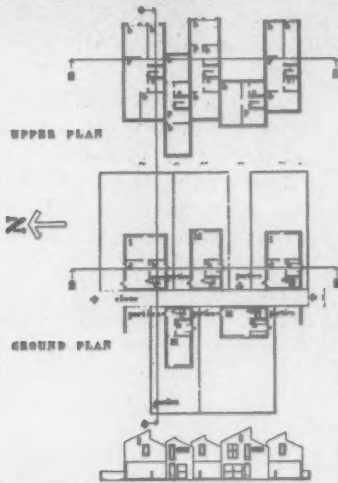
9 VILLAGE INFILL 1/8"



10



11



12 WEST ELEVATION



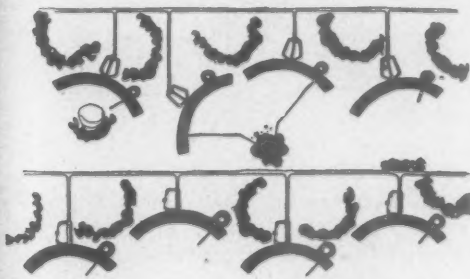
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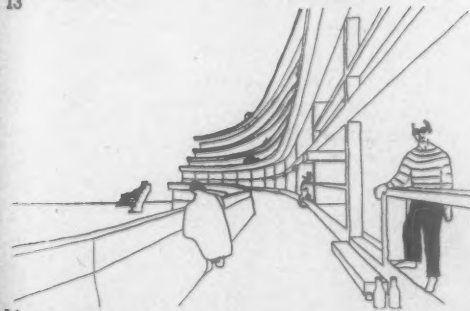
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CLOSE HOUSES 1/8"

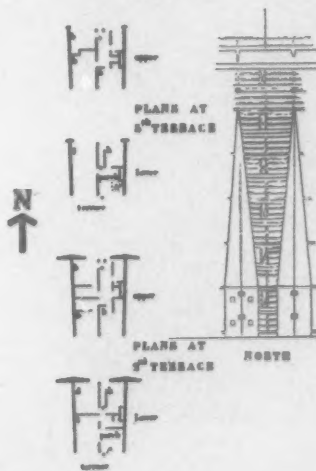
Close houses, for genuinely suburban developments, are related to the house at Watford illustrated in AR, September, 1957, but are distributed along pedestrian ways that they enclose and partly cover, 12, giving an orderly and urban public aspect even to areas of fairly low density where the houses have large private gardens. Motor-traffic enters this vertebrate system at the interruptions in the runs of buildings, 11, and parks there without penetrating further. In the terraced housing below, parking is treated as one of the group of communal facilities at the base of each curved slab, the slabs being oriented for view and light and to give a varying sense of (never total) enclosure, 13. Pedestrian circulation is by superimposed street-decks arranged to avoid dizzying vertical views, 14 and 15, and the building type has sufficiently strong a character to make its own visual order even when distributed as high-density infill, 16, among industrial developments.



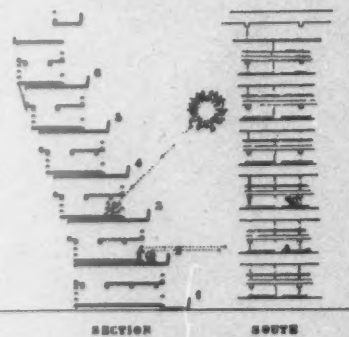
13



14



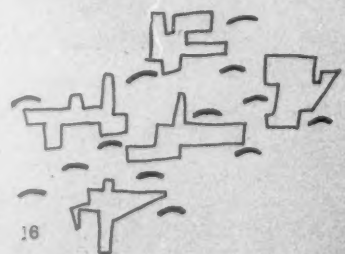
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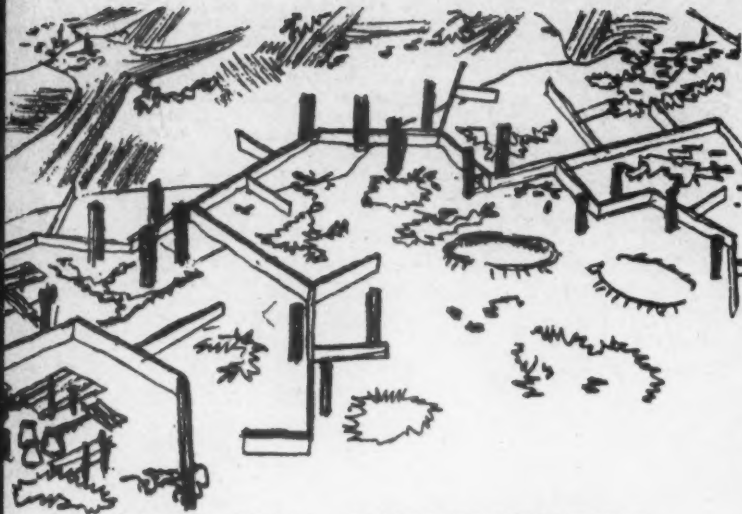
SECTION

SOUTH

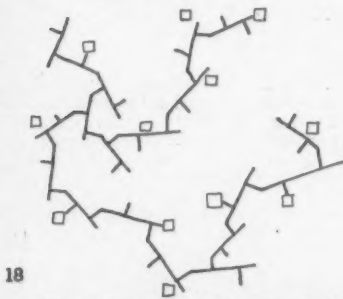
TERRACED HOUSES 1/8"



16



17 COMMERCIAL ADMINISTRATION


18
The authors' proposals for commercial and administrative areas resume the theme of their Golden Lane project (AR, December, 1955), but couple it with the use of tower blocks, in an

attempt to fuse and relate the many different kinds of multi-level building already in existence (offices, department stores, parking garages) but with the multi-level circulation now so sadly lacking, 17. This produces another type of plan pattern, 18, distinctive to this particular function and circulation. When it is put together with the other types suggested previously, to make a city conceived as a cluster of population pressure points, not as an abstract pyramid of density-figures, they offer the germ of an image of the city as convincingly urban in its own way as Poussin's, 19, but many-valued and growing, not one-valued, fixed and closed in a single hierarchy of forms. (Note—1 and 19 are details of Poussin's Les Cendres de Phocion, at Knowsley Hall.)



19

tion with a distinct structure. This is perhaps as close as one can get to a description of the new ideal in architecture and town planning.

Given this description the problem of building the three houses in an existing street is one of finding a way (whilst still responding to the street idea) to chop through the old building face and build up a complex in depth, of providing a suggestion, a sign, of the new community structure.

It is traditionally the architect's job to create the signs or images which represent the functions, aspirations, and beliefs of the community and create them in such a way that they add up to a comprehensible whole. The Cluster concept provides us with a way of creating new images, using the techniques which have been developed to deal with the problem of a mass production society, the techniques for example of road and communication engineering. Many solutions have been put forward to deal with the problems of traffic—motorways joining population centres, urban motorways within communities, peripheral controlled parking round the old centre, out-of-town shopping centres, off-motorway factories, and residential dormitories; solutions which either disperse the energies of communities or integrate them in an entirely new way.

The accepted concept of the city is one of concentric rings, gradually decreasing to the edges in residential density and ground coverage, with a radial road pattern from the historic nodal point. To this pattern has lately been added concentric 'self-contained' low density satellites (isolated around London, connected at Stockholm).

In the Cluster concept there is not one 'centre' but many. Population pressure points are related to industry and to commerce and these would be the natural points for the vitality of the community to find expression—the bright lights and the moving crowds.

These commercial and industrial pressure points are connected by motorways to frankly residential dormitories and dormitory-used villages. It is useless to pretend that our lives are so simple that we can all 'live where we work'—we have to accept population mobility and be one step ahead of it controlling the form it takes. Creating new images, both for the new elements themselves and for the old elements which they have transformed.

We must think out for each place the sort of structure which can grow and yet be clear, and easily understood at each stage of development. The word Cluster gives the spirit of such a structure, and existing planning techniques such as the control of residential densities and floor space indices, comprehensive redevelopment, and compulsory purchase, give the power (at least in England). There seems no reason why more freely flowing, more varied, more useful communities cannot be constructed.



1, the entrance front with office wing in the foreground, looking towards the brick-clad lift and staircase tower and the main entrance.

ADMINISTRATION BUILDING AT SHELL HAVEN, ESSEX

ARCHITECTS: H. V. LOBB AND PARTNERS

ARCHITECT-IN-CHARGE: G. LAVINGTON

This office building is designed to house all administration departments at Shell Haven, on the north side of the Thames estuary, including the refinery manager and his senior administration and technical staff, the drawing office, the accountancy sections and the training wing.

The site is completely flat and treeless alongside the approach road to the West Site Refinery, and the building consists of a long narrow three-storey block with demountable partitions and all components designed to a 40-inch grid. The non-modular portions are the staircases and



2

2, reception room in the training wing.

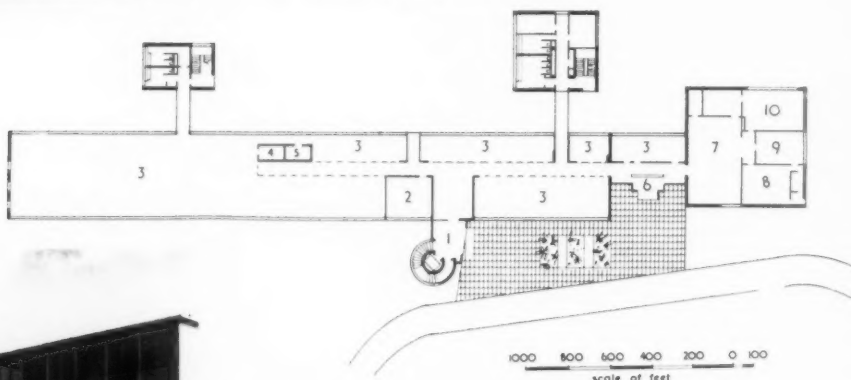
3, the rear elevation of the office wing showing the two staircase and cloakroom blocks.



3

Administration Building at Shell Haven, Essex

lavatories and the training wing, which had special planning requirements. The large circular staircase tower incorporates a lift, and is of r.c. construction with cherry red facing bricks and purple and amber glazing; the office block uses an r.c. frame consisting of prefabricated vertical H-beams and inverted T floor beams and *in situ* r.c. floors. The infill is double glazing in hardwood frames with blue grey vitreous enamel panels on the upper floors and red brick panels on the ground floor.



- key.
1. main entrance.
 2. conference room.
 3. offices.
 4. book room.
 5. strong room.
 6. visitors and training entrance.
 7. display room.
 8. cinema.
 9. discussion room.
 10. lecture room.

PUB AT PECKHAM RYE, S.E.15

ARCHITECTS: WESTWOOD, SONS AND PARTNERS
PARTNER-IN-CHARGE: GILBERT CHAPMAN
ASSISTANT-IN-CHARGE: HUGH SMART

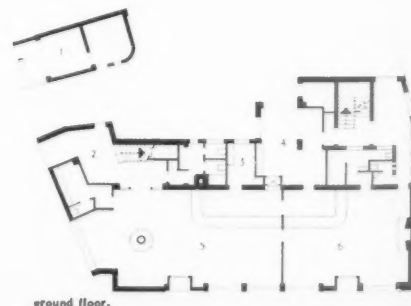
This pub faces east across Peckham Rye and contains bars below and restaurant and terrace above; the landlord's flat and sleeping accommodation for two employees are on the second floor. The pub is faced with yellow stock bricks generally, with dark red bricks on the front wall of the manager's flat and blue engineering bricks at ground-floor level. Panels beneath the ground-floor windows are granite setts, previously used as road surfacing and purchased from the Camberwell Borough Council. There is a grille to the verandah of the manager's flat in blue ceramic tiles and wood boarding is in Western red cedar. In the Public Bar the ceiling is faced with grooved plywood and painted white, with slatted portion over window seats in Gurjun; the walls are panelled in striped Sapele and wax polished. The Saloon bar has a similar ceiling and walls, with blue grey wallpaper in the window recess. There is an island fireplace with a hood of lacquered copper and gas coke fire in a wrought iron grate, which allows at least 20 people to sit round it; the copper hood radiates heat without itself being too hot to touch.



first floor.

scale: 20 ft. = 1 in.

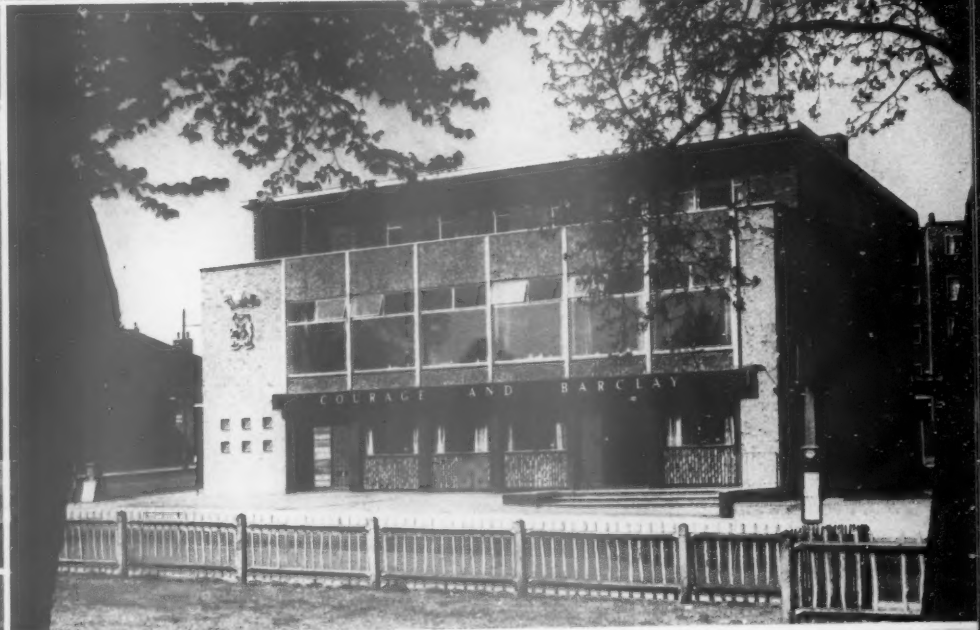
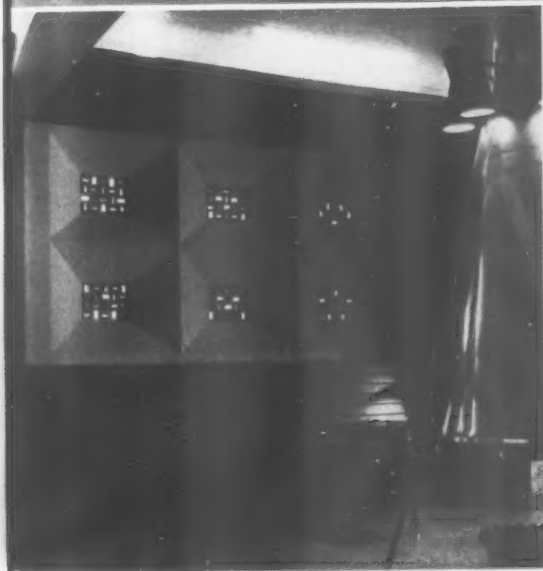
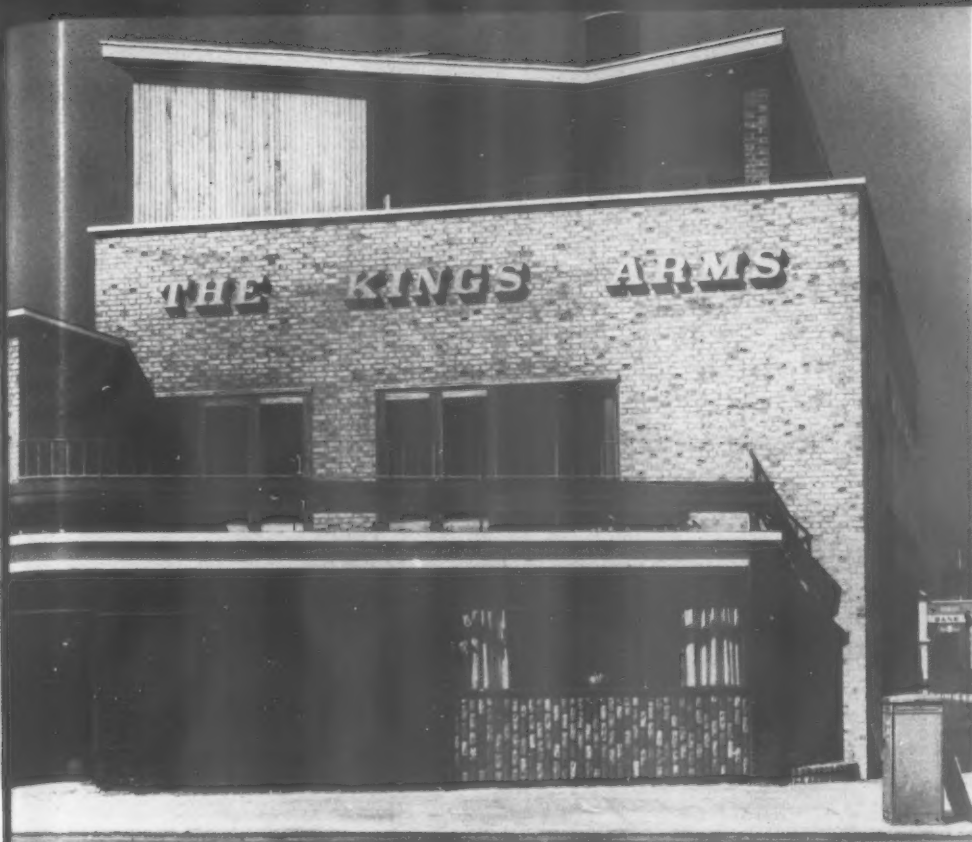
- key.
1. off licence.
 2. foyer.
 3. manager's office.
 4. crate store.
 5. saloon bar.
 6. public bar.
 7. staff room.
 8. kitchen.
 9. restaurant.

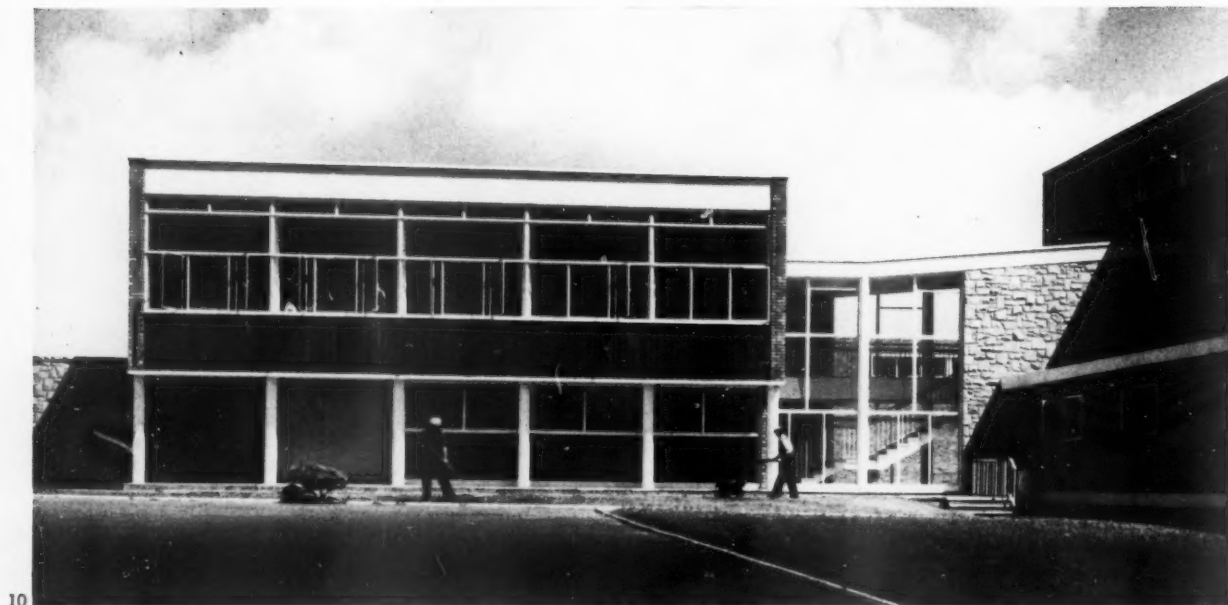


ground floor.

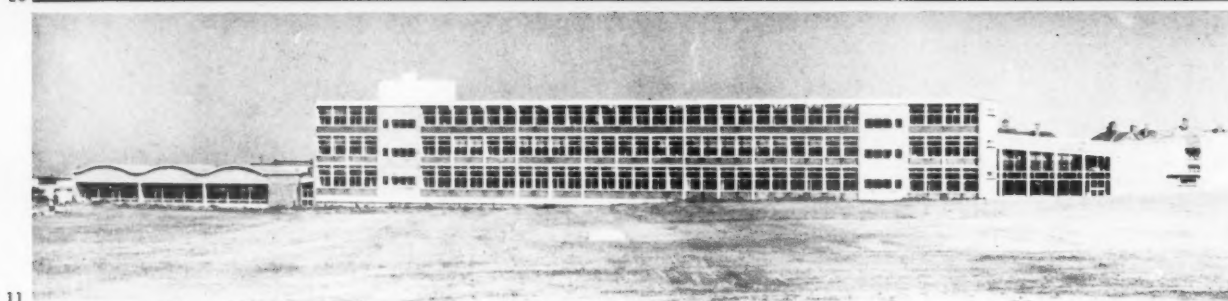
- 4, the south elevation; saloon bar on ground floor, manager's flat on second floor.
- 5, the freestanding copper fireplace in the saloon bar.
- 6, part of the east wall of the saloon bar, with coloured glass set in concrete slabs behind the wall seating.
- 7, the east elevation from Peckham Rye. The panels beneath the ground-floor windows are re-used road setts.
- 8, small bar in one corner of the first-floor restaurant.
- 9, the service yard.

4	5
6	7
8	9





10



11

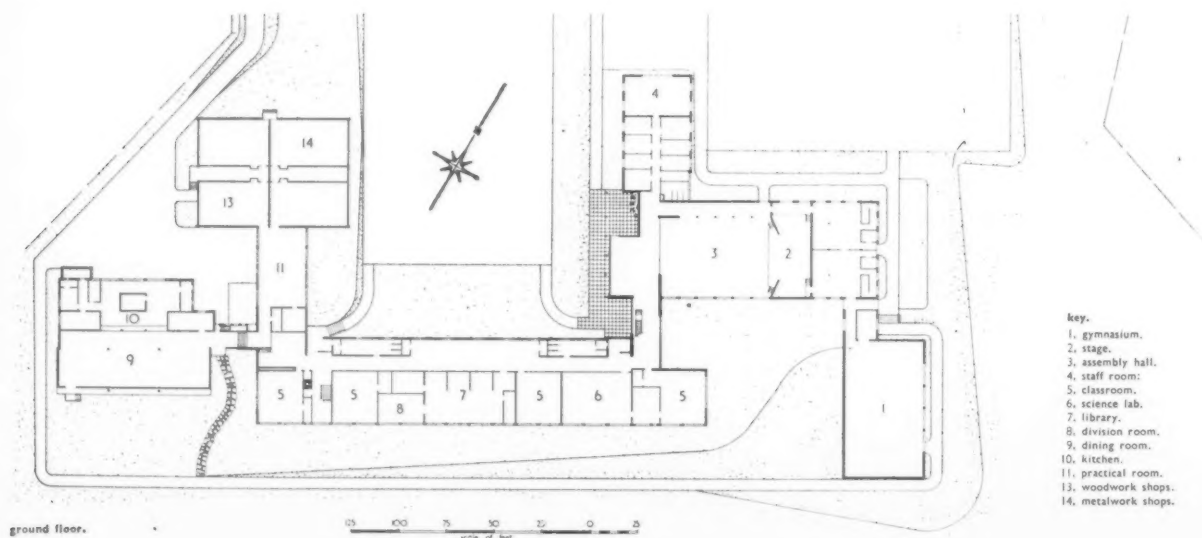
10, west end of
assembly hall with
entrance hall below.
11, south front of
classroom block.

SCHOOL AT HURLFIELD, SHEFFIELD

ARCHITECTS: GOLLINS, MELVIN, WARD AND PARTNERS, in association with the Sheffield City Architect

Hurlfield Secondary Modern School for 600 boys, south east of Sheffield, is a companion to the girls' school by Architects Co-Partnership (AR, July 1955) on a level site on high ground and with extensive views south west. The teaching rooms all face south in one three-storey block served by staircases at either end; being only one room thick, all classrooms have clerestory lighting and cross ventilation. The Assembly block contains the gymnasium and two halls; the smaller is placed over the main entrance hall and can also serve as a gallery to the main hall when required. The building is of

steel frame construction; the workshop block has an r.c. barrel roof, and the Assembly Hall a roof which slopes down from the gallery to the proscenium. The facing materials are principally brick, the pattern of the south elevation of the three-storey block being formed by accentuating various members of the structural frame and brick panels. Heating is generally by radiators with high level panels in the workshop, and floor panel heating in the main entrance hall. As the school is in the Sheffield smokeless zone overhead stokers are installed.



BOOKS

TOWNS IN HISTORY

TOWN BUILDING IN HISTORY. By F. R. Hiorns. 443 pp.; over 500 plans and illustrations. Harrap, 65s.

The purpose of Mr. Hiorns's book is to demonstrate that the cure for present ills in the building of our towns lies in the study and application of past teaching. This is an undeniable truth as a general statement, but there is a number of ways of reaching that truth. The way advocated by Mr. Hiorns will neither satisfy the new brutalist nor the old humanist; it is a middle way which, although it has its adherents, has not the impact needed for the student of today. It is, however, advocated with all the integrity associated with its author and with all the authority born of his life-long experience in the affairs of town-building.

The place this book fills is of great importance and is not supplied by any other: that of a book of reference on the subject, having much of the quality which Banister-Fletcher has in the field of architecture. Like that work it calls for continued publication and amplification so as to become an ever-increasing wealth of factual information on the subject of town-building.

The critical assessments of the great town creations of the past are learned and written in readable unostentatious prose. The illustrations are fascinating and the section on the grim towns of medieval tower-houses in Italy, standing in groups of mutual hostility like the foreshadowing of a fiercely competitive sky-scraper city, is but one example of the imagination which has been brought to the making of this permanently valuable work.

The production is efficient but very dull.

H. A. N. Brockman

BRAZILIAN MASTER

OSCAR NIEMEYER: WORKS IN PROGRESS. Stamo Papadaki. Chapman & Hall and Reinhold Inc. 1956, 80s.

This is Papadaki's second book on Oscar Niemeyer, Brazil's most dynamic exponent of the sculptural in reinforced concrete architecture. Many of the projects illustrated, developed during the past six years, have already appeared in international publications: none other of Brazil's fine contemporary architects has achieved such full recognition.

Of the seventy projects Niemeyer admitted were on his drawing-boards two years ago (from a tent-shaped mountain cabin to the Governor Kubitschek 5,000-unit double-block with a shopping and entertainment centre), Papadaki has grouped roughly one third under three headings: monumental schemes 'In the Shape of a Sub-continent'; projects notable for their attention to form, including the 2,000-ft. octopus marquee of the IVth centenary São Paulo (why always mis-spelt Paolo?) exhibi-

tion; and Tasks (schools, shops, offices) which, Papadaki asserts, prove Niemeyer's genius by the ways in which he overcame the limitations his clients imposed on him.

The author's method is expository rather than critical. Photographs, plans and models are clarified by the architect's own drawings showing progression from discarded solutions to the final choice, and by short texts of unequal literary merit. These, nevertheless, provide a fine basis for the study of an architect whose lyrical quality is best judged against its topographical background. A further service could be rendered by some discussion of the aptness and durability of his completed buildings. Perhaps Papadaki is reserving such a valuable assessment for a further volume of Works in Progress.

Claude Vincent

WINDMILL LORE

WINDMILLS AND MILLWRIGHTING. By Stanley Freese. Cambridge University Press, 25s.

This is an attractively produced book, which handles well, is beautifully printed and has thirty-five plates of which the author's exterior photographs are much the best. The subject is one that he has studied at first hand for over three decades; touring the country with bicycle, camera and sketchbook; making friends with millers, millwrights and mill smashers; absorbing their lore and finally turning his hand to the practical preservation of certain selected mills as a real labour of love. As a result of all these activities he has amassed a vast amount of information of which the essence is given in this book. In it he deals with the historical and structural aspects of windmills, their equipment, working, removals, preservation and their millers.

On the historical side he is often inaccurately speculative and it is hardly fair of him to refer to the famous engineer-architect, Sir William Cubitt, as 'William Cubitt, a millwright.' There is an excellent folding plate with perspective and cross sections of Brill post mill, Bucks, having all the parts numbered and named except, oddly, the 'sheers.' These are defined in the glossary as 'the main longitudinal timbers of a post mill,' which they are not, and this description should actually be applied to the 'side girts' or 'bressummers.' The plate is so excellent that it is a pity that a similar plate of a smock mill was not included, even if the cost of the book had thereby been increased; while the ten pages of text devoted to smock and tower mills as such could well have been extended. The author's six diagrams—not indexed by the way—are so good that one wishes for many more, for his pencil excels his camera in interior views. But some of the information quoted makes one wonder if it was gathered from the millwright sarcastically known as Truthy. On the subject of preservation the author describes graphically and in detail his own considerable achievements at Brill Mill

in 1948 and elsewhere; but, he dislikes 'windmill committees,' and omits to mention the good work done by the Society for the Protection of Ancient Buildings since 1931, especially at Outwood post mill, Surrey; by the Ministry of Works at Saxtead Green post mill, Suffolk, and by the Kesteven County Council at Heckington tower mill, Lincs, although he refers to all these three mills.

Unfortunately this is also a frustrating book, for a number of interesting details are instanced without mentioning the names of the mills in which they were to be found or the people concerned, thus giving the effect of unsupported statements. In addition, although there is a very complete indexed glossary of the millwrighting terms used in the book there is no map, no bibliography and above all, although more than 120 are mentioned, no index of windmills.

Rex Wallis

HIGHWAY CODE

ONNO

The Ministry of Transport has announced its intention to go ahead with a scheme to break the traffic stranglehold at Hyde Park Corner and Marble Arch by means of an underpass at the former and a one-way traffic system between them. This seems a first rate opportunity to scrap the use of vertical signposting, which confuses the driver and his surroundings, and try out a full scale use of the road itself as a blackboard on which all instructions to the driver are written. Ideally these should take the form of symbols, but in densely crowded areas such as this where commands rather than warnings have to be given the Ministry will probably insist that words are



essential. This might be the time to try out the ONNO system put forward in 'Switch On' (AR March 1957 by Gordon Cullen and Michael Regan)—the system



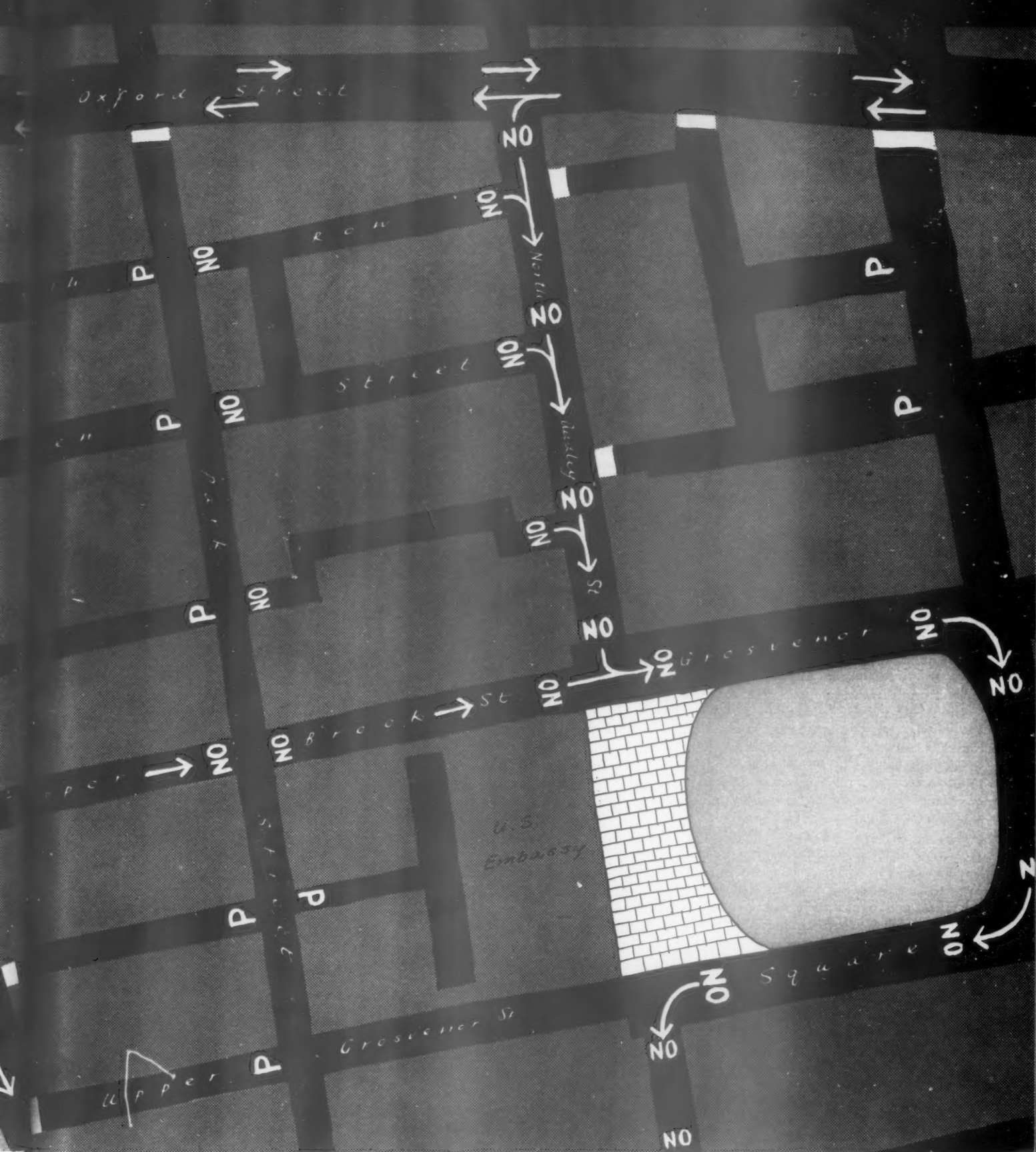
where the word ON painted across the road surface is read from one direction as an instruction to proceed whilst from the other it reads as NO.

In the map above, and in two typical windscreen views, Kenneth Browne demonstrates how this system of priorities could

be applied to the Marble Arch sector of the Ministry's scheme. Without altering it in any way he shows how a dramatically simple system of ONNO directions could at one blow articulate the traffic flow and make it possible to scrap the forest of vertical signs which will inevitably spring

up, making hideous the street, in the absence of a road surface policy.

The right hand page shows how the same ONNO system could be used in the West End parking scheme advocated by Ian Nairn (AR July 1957). Nairn's main object was to limit drastically the number of



intersections on main thoroughfares such as Oxford Street and Park Lane in order that the traffic flow should not be impeded by frequent traffic lights and the infiltration every few yards of traffic from side roads. The blocked streets would then become car parks, the junction with the main

thoroughfares being closed (shown on plan above by a thick white line which would in fact be amplified by a No Entry sign). At the other end the driver would be warned that such streets led nowhere by a large P (for parking) on the road surface at the entry to the street. He picks up the ONNO

system again when he breaks back into the main traffic stream.

A further suggestion that Saarinen's new US Embassy building should be joined to the gardens in Grosvenor Square by a piazza is also shown on the plan, with ONNO controlling the one-way traffic.

HISTORY

ENGLISH ARCHITECTS AND DILETTANTI IN PADUA

For centuries Englishmen have gone to Italy studying and sight-seeing. Amongst them were many architects, but except where they kept diaries and wrote letters we have little exact information about their journeys. We know that Burlington paid an extensive visit to Vicenza in 1719 and have some idea of his itinerary; recently Mr. Bryan Little has discovered that James Gibbs had been on the register as a student at the Scots College in Rome. There must be many more untapped Italian sources, which could be of great help; however, a document published nearly thirty years ago is of some value to the architectural historian.* It is a list of Englishmen who signed their names in the books of Padua University between the years 1618 and 1765. The editor, Horatio F. Brown, has pointed out, that in the earlier part of the seventeenth century the names were those of students who had come to Padua to attend lectures or courses. However, on January 13, 1645, one Rogerus Prat signed; he was obviously Roger Pratt who is known to have travelled on the continent between 1643 and 1649, but whose itinerary was uncertain. His business at Padua and his interest on his tour generally was architectural rather than 'educational.' John Evelyn who followed in the same year did come to study as well as to look. Note should also be taken of one Giles Vanbrook, who signed as Anglo-Londinensis on January 22, 1654-55, obviously Sir John's father. Later on, as the Grand Tour became *de rigueur*, travellers, dilettanti, architects and artists came to pay their respect to this famous university, favoured by Englishmen because of its religious tolerance, and signed their names in the book reserved for 'British Nation' which includes Englishmen, Scots and a few Irish. Amongst the visitors were also a fair number of ladies, another proof that visitors signed, e.g. 31.8.1712 Miss Catherine Tafts, the famous singer, later the wife of Consul Smith, who is familiar as a collector and dealer, and appears in the book as early as 1709, long before he became British Consul in Venice.

Perhaps the most exciting name on the list is that of one Colinus Campbell identifying himself as Scottish, who visited Padua in 1697. Unfortunately, however, he is not the mysterious architect who, as it happens, travelled in Italy at this very moment. We are on safer ground with

Thomas Hewitt, from Nottinghamshire, who signed on Feb. 12 1688 and is certainly identical with the later surveyor. On Dec. 13 1691 follows Thomas Archer Anglus from Warwickshire. Although it was known that Archer went abroad 1691 (cf. P. Murray's letter in *AR* July, 1957), no details were so far known. It is hardly surprising to find John Talman's name, as he spent so many years in Italy. Yet again a few interesting details emerge: he signs his name as Giovanni Talman once on Feb. 12 1713 and again a second time with the remark 'per la quinta volta.' That proves, of course, that he did not sign at each visit and so one must assume that other visitors also did not always sign. That would explain, for instance, the absence of James Gibbs's name.

Unfortunately the second entry of Talman is not dated, but it seems to occur between two dates in 1716, Aug. 31st and Sept. 25th; this is interesting because Talman until now was thought to have returned to England in 1715. Between these two visits of Talman, William Kent signed on Sept. 1st 1714 and Burlington on Feb. 29 1715. Thomas Coke, of Holkham, the future Earl of Leicester, with whom Kent had travelled in North Italy signed a month after Kent which might mean that both stayed there for that period.

Neither Kent's nor Burlington's name appears a second time. Another intriguing name is one J. James on Dec. 4 1717. Is he John James, the architect? On May 30 1730 Thomas Robinson signed together with Lady Lechmere and Mrs. Robinson. It would be tempting to think that this was Sir Thomas Robinson, the son-in-law of Lord Carlisle, a dabbler in architecture and a strict follower of the Burlington school.

The Carlises themselves visited Padua in successive generations, the third earl in 1690 and the fourth earl in 1714 as Lord Morpeth. But many other dilettanti and patrons of architecture went and signed—the Duke of Manchester on 23 Feb. 1697-8, and Sir John Percival, the friend of Gibbs, Oct. 9 1706: Horatio Mann, Horace Walpole's friend, signed on June 22nd 1733.

Joseph Addison's visit in 1700 must finally be mentioned. The list finishes in 1765 but after 1746 the flow practically stops; there is one visitor in 1751, then only one or two a year—or none at all. Did visitors not sign the books of the University any longer, or did fewer come that way? Venice certainly was still an attraction, but Padua probably no longer. The Palladian movement had come to an end and the new excavations and discoveries round Naples might well have deflected the majority of the tourists to the South.

S. Lang

ARCHITECTURE

PUTTING NEW WITH OLD

No general slogan or abstract charter applies to the problem of adding new parts to old buildings; even the most convinced modernist must be prepared to temporize with what he might

otherwise reject, especially in England where the chance will rarely be offered to execute the Gordian solution of wrapping patent glazing round a Biedermeyer pediment, or clapping two storeys of *Architettura Organica* on top of four of *Heredità dell'Ottocento*.

The new wing to St. John's College, Oxford, 1, is a fair sample of the kind of problem that arises in England—a small adjustment to an existing schedule of accommodation, partial replacement of an existing building. The new work, for which the architects were Booth and Ledebor, includes muniment and common rooms, fellows lodgings, etc., but lies, both plan-wise and in elevation, entirely within the limits of the old. In section, however, it fills out these limits more fully, and creates a vertical back-drop to the courtyard, instead of the weak backward slope of the old, 2, which terminated in an undesigned vertical feature competing with the chapel. Formally, the composition has been tightened up, the sense of enclosure made more positive, and the gable end of the chapel given fresh prominence.

Christopher Gotch's conversion of Magpie House at Honington, Warwicks, has a related case-history. The new work, 3, makes a tidied-up and unified block where originally there was only an unconsidered accumulation of lean-to's and sundries, 4. But if this had been expressed on the garden front as a single block with a unified façade, it might well have unbalanced the long façade irretrievably, for the gable at the other end is not powerful enough to stand much competition. But by expressing the fact that it contains two parallel but different runs of rooms, 5, and making its garden aspect into two separate gables, different in materials, fenestration, projection and pitch of roofs, the new work is kept within the general scale and idiom of the old, without pretending to be anything but new. It is this, the true picturesque appreciation of the situation, rather than merely using gables because there were gables there already (keeping in keeping) that gives a live homogeneity of disparate parts in amicable agreement, rather than the dead homogeneity of repeated carbon copies.

Miles Coolenay

* Horatio F. Brown, 'Inglese e Scozzesi all'Università di Padova dall'anno 1618 sino al 1765' in *Monografie Storiche sullo Studio di Padova*. Venice, 1922.

EXHIBITIONS

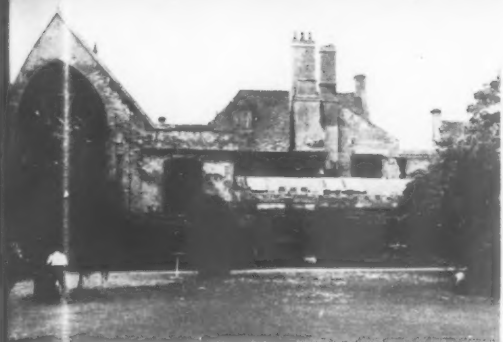
PAINTING

The series of retrospectives sponsored by the Edinburgh Festival comes under the heading of polite entertainment. The names—Renoir, Degas, Cézanne, Gauguin, Braque and now Monet—are beyond reproach, the works usually include some of the nobler stand-bys of the picture postcard trade, the catalogues always deserve to be called scholarly, and although the box-office appeal of Braque was, I understand, disappointing, there is no doubt that every exhibition has given a great many people a great deal of pleasure. But there is something rather horrible about the way these exhibitions can draw

the sting of a man's work and reduce his daring and desperation to a defence of the moderation and delicate sensibility of the aesthete who makes the selection.

The task of reducing the impact of Monet's daring and presenting an explanation of his desperation that uses facts against the truth, has been entrusted to Professor Douglas Cooper and Mr. John Richardson. They have not hesitated to belittle Monet's great contribution to twentieth-century painting, but it must be admitted that they have executed their task with skill and a fine show of research.

Better still, they have brought together a number of incredibly beautiful works painted by Monet in the nineteenth century, of which two examples are reproduced here: *La Grenouillère*, 1, painted in 1869 when he was twenty-nine years old, and *The Train in The Snow*, 2, painted in



2

before ↑

after ↓



1

putting new with old. Above, St. John's College, Oxford: addition by Booth and Ledebor. Below, Magpie House, Honington, Warwickshire: conversion by Christopher Goltz.



4

before ↑

after ↓



3



5



1



2

1875. Such pictures lead a double life, for the *motif* is so blandly ensconced in the paint that if one keeps one's distance it is possible to admire the view and the illusion of light and air without taking notice of the facture, and if one goes nearer, the illusionism dissolves into a vibrating surface of inventive brushstrokes. Monet was always seizing the opportunity presented by amorphous aspects of nature—water, cloud, smoke—to turn them into playgrounds for the creative accident, and it now seems natural enough that his delight in paint for its own sake should have led him as time went on to dwell on *motifs* that would give him greater rein for improvisation and a free play of linear paint marks.

By the time that the cubist reaction against impressionism was at its height, Monet, who died in 1926 at the age of 86, was pushing the inconstancy of the impressionist image towards a new concept of painting as environment, and in the same huge panels intended as the total decoration of a salon, used the theme of the *Nymphéas* to produce, as he himself said, 'the illusion of an endless whole, a wave without horizon and without shore.' The outcome of this conception of painting is to be seen in the panels installed at the Orangerie and in the panels of equal importance recently acquired by Walter P. Chrysler, Jr., and the Museum of Modern Art in New York, and it is their quite startling anticipation of the series of enormous 'dripped paint' pictures executed by Jackson Pollock twenty years or so later that has led to a reassessment of Monet's achievements.

Professor Cooper, however, will have none of this. He will not concede that there is a significant relationship between the last work of Monet and the American action painters, does not find any tendency towards 'abstract impressionism' in the late *Water-Lilies* series, and refuses, in any case, to take them seriously. 'For we must not overlook the essential fact,' he writes, 'that Monet painted the late *Nymphéas*, of which we now hear so much, at a time when his sight was not merely clouded by cataract but rapidly failing . . . by these he would not have wished his intentions to be judged. The few unfinished works which figure in the present exhibition have, therefore, been included to point a contrast.'

No one, of course, would deny Professor Cooper's right to express what must be presumed to be a genuine dislike of the late work, and probably there would have been little harm done if one of the very large panels mentioned above had been included in the exhibition. As it is, Professor Cooper does not even refer to the gravity of the omission, and one can only

assume that he has deliberately withheld the pictorial evidence that would be most likely to cast doubt on his judgment.

Curiously enough, a small picture has crept into the show which goes a long way towards demolishing his argument. I cannot reproduce it here because the Royal Scottish Academy did not provide photographs of any of the twentieth-century work, but it is called *Leicester Square by Night*, it was painted in 1904, before there was any talk of failing sight, and the subject has disappeared under a downpour of fiery, expressionistic brushstrokes. It is already clear in the *Cathedral* series, painted in the nineties, that the *motif* is becoming a pretext for the creation of focusless oblongs of richly worked paint, and in *Leicester Square by Night* the process has been completed. Professor Cooper deals with this intrusive little picture by claiming that because it is unsigned it is unfinished, although he does not claim that unsigned pictures painted in earlier periods are unfinished. As it happens, *The Pink Boat*, an unsigned picture painted in the eighties, could have provided him with strong grounds for such a claim, because Monet would appear to have been so preoccupied by the great swirling arabesques of paint provoked by the sight of underwater weeds that he omitted the water altogether.

Professor Cooper's failure to find an explanation of Monet's development that does not point towards abstract impression has led him to the view, if it can be called a view, that Monet's true greatness 'still remains to be discovered.'

Meanwhile, the Festival authorities could make amends for their unsatisfactory presentation of Monet by putting on a comprehensive exhibition of Kandinsky's great period of free abstraction, since it was Monet's *Haystacks* which gave him his first inkling of the 'all surpassing power of the palette.'

The Scottish Arts Council's main contribution to the Festival was an exhibition of Contemporary Turkish Painting. The attempt on the part of some of the exhibitors to do something specifically Turkish was not very happy, and consisted in the main of figures in traditional costume painted in a style remarkably similar to John Craxton's modified version of physical cubism. The paintings of Fahr-el-Nissa Zeid, Nejad Melih and Selim Turan, whose *Composition* is reproduced here, 3, frankly derive from more up-to-date aspects of the School of Paris, and may lay better foundations for a modern Turkish School than the work of self-conscious nationalists.

Before the Festival opened, the Scottish Arts Council put on an exhibition of George Chinnery (1774-1852), which has since come to St. James's Square. The



3

selection was made by Allan Carr, and his interesting preface to the catalogue gives the impression that Chinnery, who made a fortune as a portrait painter in India and suddenly departed to China, leaving £40,000 of debts, would be a better subject for a biography than an exhibition. His portraits are uniformly bad, and his trick of giving all his sitters bright, rose-bud lips is farcical, but some of his smaller



4

studies of Chinese themes, such as 4, have a grave and stilted charm.

The only serious contemporary exhibition held in Edinburgh during the Festival was a retrospective of the paintings of Aleksander Zyw, who went to Scotland during the war, has made his home in Edinburgh and is probably the best abstract impressionist working in Britain at the present time. The term 'abstract impressionism' fits his work precisely, for



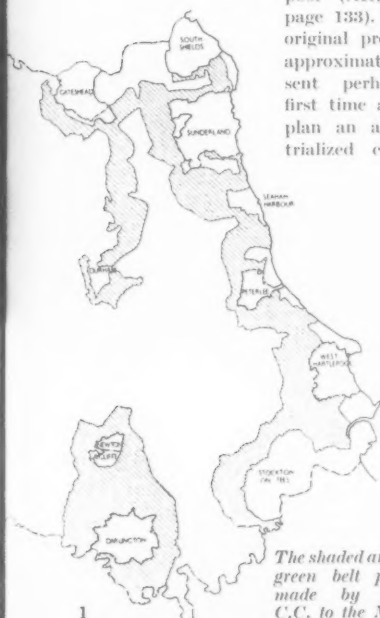
5 he is concerned with the changeableness of light and a sense of expanding space, and as exemplified in the picture reproduced here, 5, his brushstrokes persistently make spontaneous references to landscape.

Robert Melville

COUNTER-ATTACK

31 Provincial Green Belts (*Durham County Council and the Ministry of Housing*). The scheme launched by Mr. Sandys two years ago for a system of provincial green belts may well end with more of a whimper than a bang, if the experience of Co. Durham is any indication. The county has both conurbations and isolated industrial towns, and applied the green belt idea to both in the spirit of the original announcement and against a lot of local thick-headedness: something which is especially necessary in Durham because the whole of the eastern half of the county is in danger of running together as a result of attitudes such as that expressed by West Hartle-

pool (AR, Feb., 1957, page 133). The County's original proposals shown approximately, 1, represent perhaps for the first time an attempt to plan an area of industrialized countryside as



The shaded areas show green belt proposals made by Durham C.C. to the Ministry.

a whole and not fight a set of piecemeal rearguard actions against voracious urban councils. The Ministry has whittled the proposals down to a strip beside Tyneside, to be extended west of Sunderland 'when other land use problems in the area are settled'—by the time they are settled there may be no green belt left—a strip between old sprawl at Easington and new sprawl at Peterlee and some sort of belt around Durham City as National Heritage, etc. In other areas the Ministry appear to feel that 'the pressure for development is not sufficient, nor is there enough danger of settlements linking up to justify the establishment of formal green belts.' The Ministry should go and have a look.

32 Northfleet, Kent (*Bowater Paper Corp.*).

The paper mills by Farmer and Dark (see page 300) are noteworthy in land use as well as architecture, in that they re-use one of the biggest of the chalk pits at Northfleet and are almost invisible from the village above. Between here and Dartford there are over a dozen pits, nearly all dry, and all close to the Thames Estuary in a semi-industrial strip. There is an opportunity here to plan a two-level town, housing or countryside above and an industrial area below which nobody sees until they look over the quarry edge. In particular the type of light industry which would cost a fortune to landscape and which is already depressingly visible around the Crays and Sidecup might well be canalized here.

33 Etwall, Derbyshire (*County Education Committee*).

Etwall House was a Georgian house demolished in 1954; the landscaped grounds remain and were re-used when a secondary school was built on the site. The result, 2, is delightful, a real exchange of the c 20 for the c 18, boldly put in the middle of the village and left open for anyone to admire. There are now dozens of landscaped parks lying around the countryside minus their original houses: it would not take much ingenuity to channel into them all sorts of buildings at present put up on the nearest bit of spare ground—government offices, research establishments, as well as schools. The school was designed by J. S. Spurr and the County Architect's department; the landscape consultant was J. W. Dudding.

34 Street lights, Roehampton (*Borough of Wandsworth*).

In its effects, the swan-neck was one of the worst of the 25-foot lamp-standards. It was taken over unwillingly from the old

RFAC list and has in fact only just been discontinued by the COID. They still go marching on and nowhere more offensively than in Roehampton Lane. One side carries the old steel standards with new fittings, and remains a street, 3; the other uses the swan necks and has become an abstract pattern looking for a canvas, 4, without relevance to Roehampton or anywhere else. One would have

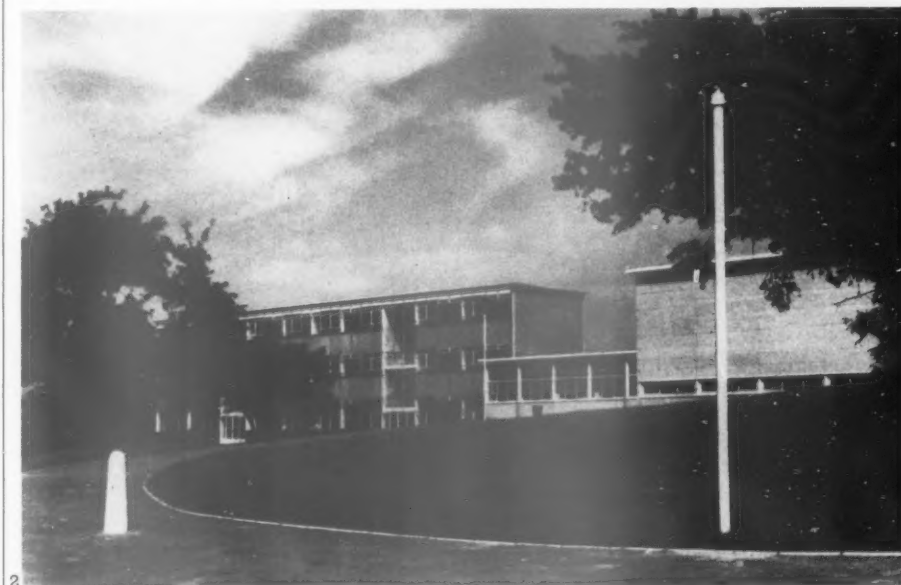


thought that here if anywhere some droplet of the need for unobtrusive street furniture might have percolated through; apparently not.

In fact the Borough Engineer deliberately specified this design because he preferred it. This of course is quite legitimate—far more so than apathy—but whereas the design of the standards themselves could be considered a matter of 'taste,' their effect in the street is very nearly a matter of mathematics.

35 Swansea Castle, Glam. (*Swansea City Council and Ministry of Works*).

Swansea Castle is a queer thirteenth century building with the same sort of half-Italian touches as the Bishop's Palace at St. Davids. At the moment it is cheek by jowl with other buildings, chiefly those of a local paper. The Corporation wanted to demolish it for office space and applied for it to be removed from the list of ancient monuments, after prairie-planning a desert of avenues and gardens and architects' hack work for the rest of the City centre (the only place with any life is inside the blitzed shell of the market). Understandably, this didn't get very far; but the Ministry of Works would like to remove all the later additions and Set It Apart as a Monument, in the usual style. So the Swansea City want to kill it by demolition and the MOW want to kill it by putting it under a glass case. In fact, apart from some simple structural repairs, it should go



on as it is now, a fragment which is part of the life of the town as well as an entry in the history book. Swansea, as rebuilt, is certainly badly in need of it.

36 Markyate By-Pass, Hertfordshire (*County Council and Ministry of Transport*). This by-pass is one of the first completely new road projects to be finished since the war and is assessed here as a typical example of current British road-making technique. Similar reports on new projects in the landscape (e.g. reservoirs and airfields) will appear from time to time. At Markyate the score is as follows:—

Good: the general lines, 5, and the fact that a by-pass fitting closely round the village was considered at all; the underpass from village to church and especially the fine footbridge, 6, designed in the C.C. office by H. G. Baskett, engineer, and H. P. Chetwynd Stappylton, architect.

Bad: the asphalt path (people can easily walk through the village itself), the clumsy revetment of one of the banks, 7—it would have been much better without any attempt at 'detailing'—and the heavy trim—especially the wire (no new hedges seem to be grown) which negates the value of the subtle siting. The bus stops, provided without lay-bys, seem to be an utter anomaly and dangerous—again, buses can now legitimately go through the village.

This raises the problem of Markyate village itself. Before the by-pass came it was almost uninhabitable—a day and night stream of lorries travelling both ways in a very narrow street. As a result, understandably, there are now a dozen vacant sites and many more empty houses. What will happen to them? The village street is now quiet and peaceful, and there is no reason for not rebuilding to the street line, because it is an attractive place, 8, minus the lorries. In this way it could house a lot of people and benefit from it; if houses are detached and set back (as in a bad private estate at the south end of the village) the centre will fall apart. This choice is entirely in the hands of the planning authority: we know that the County Planning Officer disagrees with many of the REVIEW's ideas on open and close development; this is in a way a test case of terracing and maintaining street lines and the Bureau would welcome his comments on the problem.



37 Colchester, Essex. (*City Council and Colchester and East Essex Co-operative and Industrial Society*). St. Nicholas Church, 9, which was a notable feature of Colchester townscape, was sold and pulled down two years ago—one condition being the sickeningly genteel one that the site wasn't to be used for the sale of fish and chips. Below is what has replaced it, 10,

photographed last Easter and put up by the Co-operative Society (C.W.S. chief architect W. J. Reed)—set back to the existing street line, of course, so that the High Street now lacks a closing feature at its east end. The final touch is that the gravestones in the churchyard are to be re-used as crazy paving. This would be a serious contender for the year's worst-looking building; a pitiful misuse of a fine site. In the 'thirties under L. G. Ekins, Co-op. architecture was progressive and proud of it.

38 S O S: Devonport, Devon (*Plymouth City Council*). Another urgent cry from Plymouth: this time it is Ker Street, Devonport, 11, where the houses on the right-hand side of the street are to come down as being unfit. In fact they are still quite capable of being reconditioned—the trouble would never have arisen if they had been properly



maintained by the corporation—and preserved as a reminder of an older and better Plymouth than Armada Way.

progress report on earlier cases

3 Edmondbyers Reservoir (*AR April 1957*). Case won. The Ministry has ordered that a landscape architect be appointed and that all landscaping and design of buildings shall be agreed with the County Council. This is a decision which may have far-reaching effects in other similar cases in the future; the credit should go to the Durham County Planning Office which prepared an admirable illustrated report showing exactly what the effect of the reservoir would be and how inept and municipalized handling had spoilt the effect of the older reservoirs nearby.

10 Westgate Fields, Chichester (*AR June 1957*). The Inquiry was held on October 8 and 9 and the Bureau gave evidence in opposition to the scheme. A note in the *Observer* asking for readers to send their evidence to the Bureau (who are able to present it by proxy) produced over eighty replies.

17 St. John's Wood (*Street lights, AR June 1957*). Case partly successful. St. Marylebone have put up improved alternative lighting systems—fluorescent and colour corrected mercury, the latter on information supplied by the Bureau, and the residents are to vote on them. This sort of step is a beginning towards making Britain a democracy once again and the Council are to be congratulated on taking it. Alas, they sent round a circular at the same time—which must have cost something, by the by—denigrating their opponents as 'Regency bucks' and saying that it was impossible to harmonize old buildings and new street furniture. This is utter unalloyed nonsense (cf. Coventry, Canterbury, or any German city) and that anyone could put it forward as a serious argument is almost beyond belief.

18 Feckenham, Worcs. (*CEA Sub-station; AR July 1957*). Public Inquiry November 5; the Bureau will be giving evidence.



OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN

Technical drawing of a three-tiered bunk bed system. The drawing includes the following labels:

- HOT CEMENT TUBE
- STOVE
- PERMANENT SOURCE
- SLEEPING
- STORAGE
- FOLDING
- HARDWARE
- REINFORCED

A diagram of a 10' x 10' display case. The overall dimensions are 10'0" wide and 10'0" high. The case is divided into several sections. The top section is 1'0" high and contains two '100W-100V' lamps. The middle section is 6'0" high and contains two '100W-100V' lamps. The bottom section is 3'0" high and is divided into 'LEFT STAYDOWN' and 'STORAGE' areas. The case is labeled 'PAINTED PLYWOOD' and '10'0" x 10'0" ABSOLUTE MINIMUMS'. The diagram also shows '10'0" x 10'0" ABSOLUTE MINIMUMS' and '10'0" x 10'0" ABSOLUTE MINIMUMS'.

Technical drawing of a wooden cabinet. The drawing shows a top-down view of a cabinet with a central panel labeled "CABINET" and two side panels labeled "SIDE". The central panel is divided into four sections: "STOVE" (top), "CUPBOARD" (middle), "CUPBOARD" (bottom), and "STOVE" (bottom). The side panels are labeled "SIDE". The drawing includes dimensions: "10' 3\"/>

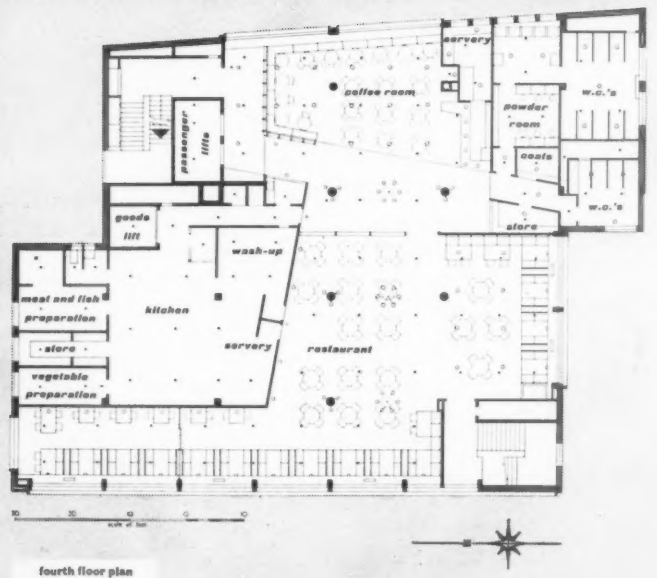
und floor of Harvey's. This and
were designed by James Dartford.

A black and white photograph of a jewelry store interior. The store features a large, dark wooden display case with glass fronts, filled with various jewelry items. A counter with a corrugated metal front is visible in the foreground. A person is standing behind the counter, and another person is visible in the background. The store has a high ceiling with a large, dark wooden structure. The overall design is modern and functional.

Architects: G. A. Jellicoe and Partners
Partner-in-Charge: F. S. Coleridge

The south window in the front shopping floor is a preparation for the total contrast with the restaurant floor; here there is a framed view of the towers and roofs of Guildford, a composed view looking south along the Wey Valley towards Godalming, and a heterogeneous view west and north comprising Cathedral and countryside.

349



2 3 Facing page, various views of the restaurant and coffee room on the fourth floor: 2, the coffee room from the lifts. 3, the restaurant looking towards the north windows. 4, the west windows of the restaurant. 5, the entrance foyer of the coffee room, and 6, photomural at the south end of the restaurant; here the ceiling is painted blue, elsewhere it is pale grey. On this page, 7, wall-fitting of perfume counter.

grid of 20 ft. by 16 ft. 6 in.; columns are 14 in. square or 16 in. in diameter. The decision to have a flat slab was due to restrictions on the overall height of the building, and the absence of beams enabled the false ceiling containing all services to be suspended only 9 in. below the slab. Services accommodated in the false ceiling are the sprinkler installation and the pneumatic tube system, which was extended from the existing building and a new operating room installed.

The walls are generally plaster; the restaurant having natural western red cedar in 8 in. wide lapped vertical boards. The ceilings are 2-ft. square V-jointed fibreboard tiles, with the perimeters in

plaster and expanded metal. Floor finishes are: in the basement, granolithic; on the ground floor, terrazzo tiles; on the first floor, carpet; on the second and third floors, linoleum; on the fourth floor, wood block and carpet, on the main stair, terrazzo, and on the escape stair granolithic. Doors, timber panelling and fascias to lift entrances are in sapele mahogany and door furniture is satin nickel alloy.

In the restaurant and coffee bar, no strong colours were introduced above sill height, to give the views their maximum effect. The colours of all crockery were specially selected; yellow and flame have been used entirely for the seating upholstery, and the carpet is green and black.



The structure is by Ove Arup & Partners; the shopfittings on the sales floors are by James Dartford.

STORE AT GUILDFORD

2 DESIGN REVIEW

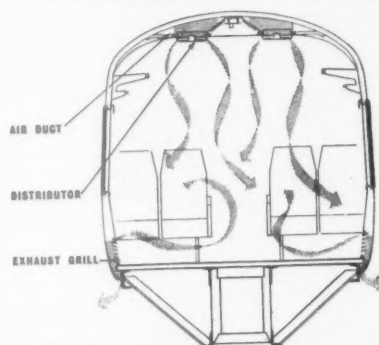
PROTOTYPE RAILWAY CARRIAGE

This prototype carriage is one of the results of British Railways' request to various coach manufacturers to suggest improvements to the comfort of travellers. Farmer and Dark were commissioned by Cravens, a firm of coach manufacturers, to design prototypes for both classes of travel, and except for wheel-gauge and overall dimensions, they were given freedom to design as they chose.

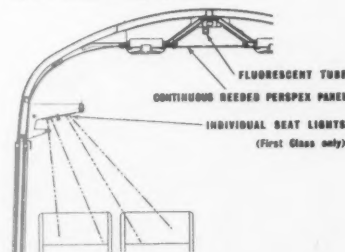
The designers wanted their railway coach to look like a form of travel and to have no suggestion of a drawing room on wheels. The passenger aeroplane was an obvious example of this lack of pretence, and the central open corridor, to accentuate the direction of travel, was therefore used.

The windows are double-glazed and have venetian blinds between the glasses, which allow the view to be enjoyed without glare; furthermore, with the provision of pressure ventilation, it was possible to avoid the nuisance of opening windows. Comfort being the first essential of travel, the seats and foot-rests were made adjustable to three positions; and the colour-scheme of the seats, cool and deep, was intended specifically as a background to good clothes, whether formal or the most informal. The wall and acoustic ceiling surfaces are various washable plastics. Other prototype carriages have been designed by Sir Hugh Casson, the British Railways architect and Trevor Dannatt.

The two prototype carriages designed by Farmer and Dark for Cravens: 1, the 2nd-class with seating capacity for 52. The first-class car, 2, seats 33. In both, seats are reclinable and the windows are double-glazed.



3, the ventilating system.



4, the lighting system.



LIGHTING FITTINGS

Three simple shapes form the basis for a range of exceptional versatility.

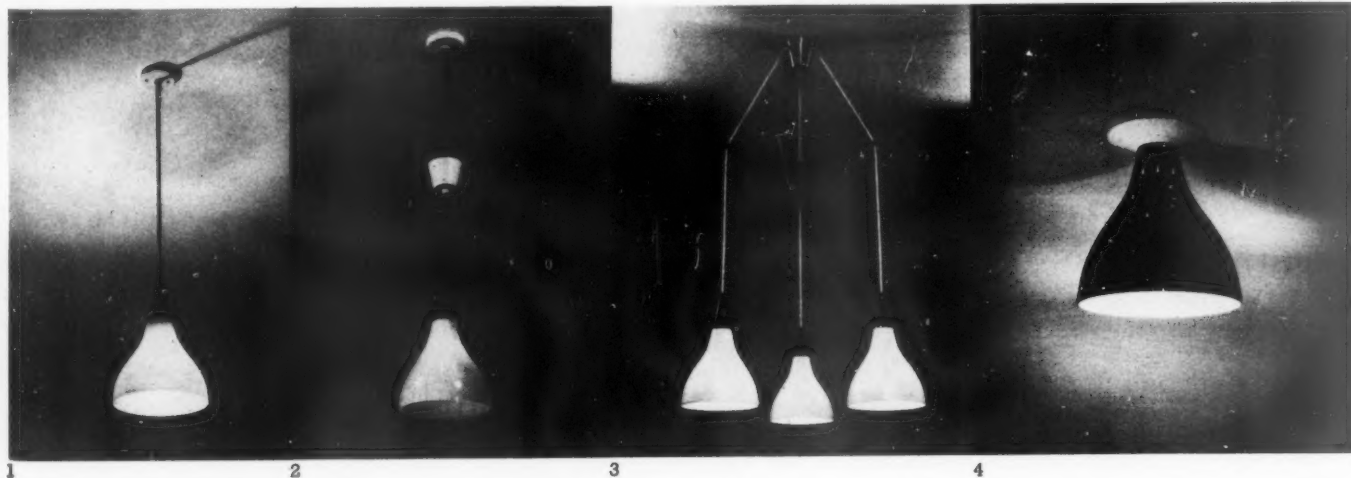
Troughton & Young Ltd., in its new 'Harlequin' range of lighting fittings, has taken a theme of the utmost simplicity and woven it

into a remarkable pattern of interchangeability. The range is based on three austere shapes; cone, cylinder and bell—the bell being available in one size only, the cylinder in two sizes and the cone in three. These, in turn, are

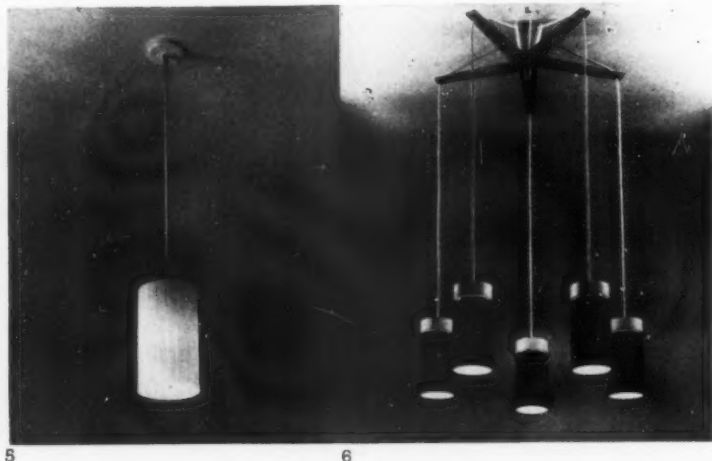
made up in a variety of materials—aluminium finished in satin black or white, or in five good colours; white flashed opal glass or white ceramic fired glass with a simple two line decoration. Add to these a number of metal capping pieces—drum, cone, frustum or shallow saucer—a dozen or so flush or pendant ceiling suspension systems with ebonized wood spiders for the multiple pendants, as well as

[continued on page 353]

bell



cylinder

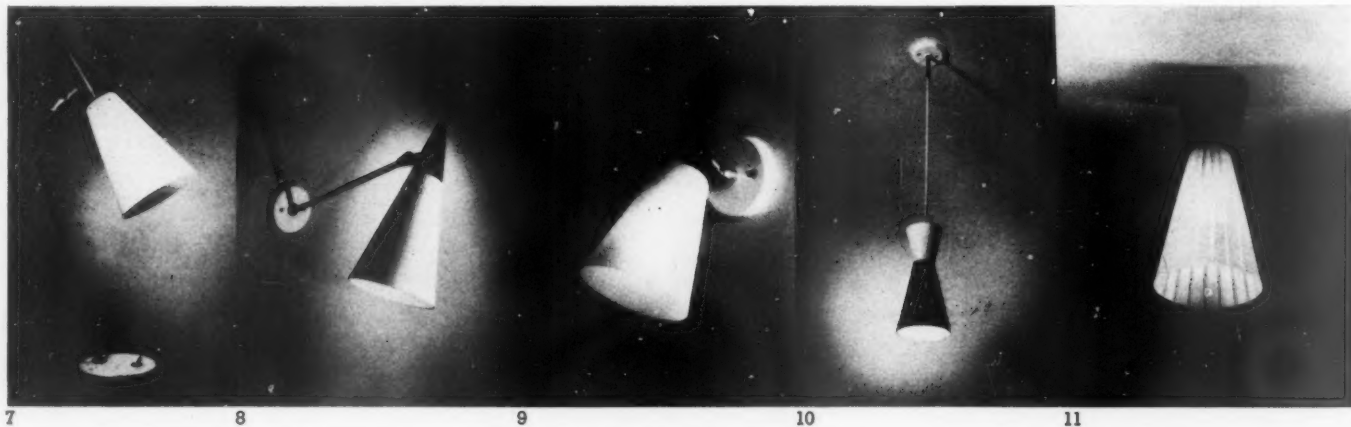


above four fittings using the bell-shaped shade: 1 and 3 are in opal glass with contrasting conical metal caps. 2 has a ceramic fired glass shade with simple line decoration and in 4 the same shade is in black finished metal. Prices: 1, £2 9s. 10d. 2, £4 11s. 10d. 3, £9 19s. 10d. 4, £1 5s. 5d.

left two fittings using the cylindrical shades. 5 is ceramic fired and decorated glass. 6 has black finished metal shades separated from the cylindrical capping pieces by perspex discs which give a feeling of lightness to the design. Prices: 5, £3 12s. 0d. 6, £15 3s. 0d.

below five variations of the cone-shaped shades. 7 and 9 are in plain opal glass. 11 is ceramic fired and decorated glass. 8 and 10 are in metal and show the variations which are possible in the combinations of shades with different capping pieces. Prices: 7, £6 1s. 10d. 8, £3 14s. 0d. 9, £2 9s. 0d. 10, £2 3s. 2d. 11, £2 3s. 10d.

cone

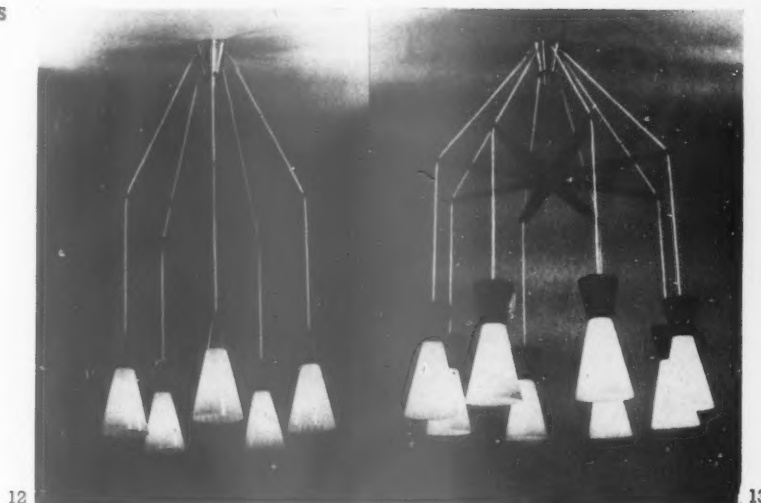


LIGHTING FITTINGS

(continued from page 352)

wall-mounted and table supports, and the possible combinations will clearly run into hundreds; if colours are taken into account, into thousands.

The success of the range, which was first shown at this year's Electrical Engineering Exhibition at Earls Court, rests precisely in the dramatic juxtapositions of shape and colour that are afforded by this versatile system, although some combinations, understandably, are less satisfying than others. Equally important is the attention given to detail design, a notable example being the treatment of the cylindrical metal shades. Here the shade is separated from its attendant capping piece by a thin 'Perspex' disc which lightens what might otherwise have been a ponderous shape. The fact that the glass is of British manufacture is sufficiently rare in fittings of this quality to be worthy of mention.



cone (contd.)

Two multiple pendant fittings showing the use of the simple wooden spreader units.

Prices: 12, £15 18s. 0d. 13, £19 17s. 6d.

Prices include purchase tax where applicable.

3 TECHNIQUES

THE BUILDING EXHIBITION

by John and Ann Voelcker

The Building Exhibition is of greater interest to the British architect in proportion to the influence he is able to exert on manufacturers; in proportion as the products shown there reflect what he thinks he wants. Though a visit to any post-war building exhibition shows that there is still a wide gap between what the architect wants and what the industry is pleased to give him, there is no doubt that his influence on manufacturers is on the ascendant and that therefore successive Exhibitions tend to get more rather than less interesting. In our attempt to do justice to this one, we are inevitably at a disadvantage in that we have to go to press a long time before the exhibition opens and before even many manufacturers have made up their minds what they want to show. It must be taken therefore as a description of the main lines of the Exhibition and not as a complete record of all that is to be found there.

It is in the nature of technical advance to be piecemeal in kind and discreet in its effect. When first confronted with the question 'what has been happening in the building industry since the last Building Exhibition?' your first reaction is to say 'almost nothing'; but then you realize that in almost every sector some shift has taken place in our building habits and that each of these shifts is destined, as the century moves on, to work a prodigious change in the look of our buildings.

In reviewing this year's exhibits it seemed reasonable to adopt the same classification used two years ago, namely the division into 'materials,' 'sheets and sections,' 'components' and 'assemblies' which has been hallowed by BSI. For this imparts an unshakeable order when, goodness knows, order is so badly needed.

What then has happened in 'materials' since 1955? There are perhaps

no new materials on an architectural scale; that is, on a scale which can be seen at a distance. But there are several important developments of a subtle kind. Preservation, for instance, has been attracting much attention. It is only in the last few years that we have been made aware of the damage to timber through dry rot during the years of inattention of 1939-45 or of the threat to our inheritance in masonry through the dwindling of masonry skills. For the first we have much improved timber preservatives and for the second we have our growing knowledge of the use of silicones. The other class of materials which has had to be frenziedly developed is that of mastics and jointing compounds. Of the lasting powers of these when used in the revolutionary context of the light framed structure, even the pundits have little to say; but one great advance which we can note is the multiplication in the

techniques for fixing them: techniques of squirting them with guns, of sticking them as tapes, of snapping them in place as extrusions, so that even if they don't last very long it should not prove costly to replace them...

Of 'sheets and sections' there is little to say. The development of lightweight building has called forth some new panels and decking units, but most of these, being composite, fall more properly into the category of 'assemblies.' There is, however, one authentic 'section' which has come on tremendously since the last Exhibition and that is the pitch fibre pipe. One of the most striking and hopeful facts about British building during the last few years has been the comparative readiness of the plumbing and drainlaying section (from whom much dogged resistance was expected) to take up the pitch fibre pipe and the single stack plumbing system.

But it is in 'assemblies' that the most evident changes are to be expected. There was already a formidable curtain wall entry in 1955 and that year must be taken as the year of the launching of the British off-the-peg walling industry; but though we were quite pleased with them then, we can see now how crude so many of the exhibits were and how many problems they left unsolved. In particular it will surely not be too much to hope that this year's crop will have solved the problem of the 'cold bridge,' of the passage of heat through a continuous metal section passing from inner to outer skin. It is precisely the rise in the price of fuel and the economic justification for higher standards of insulation, to which it gives rise, which has provided the main motive for change throughout this section. It affects roofs—the Thermal Insulation Act will come into full operation in January, 1959—and we must expect a new crop of roofing-cum-insulation-cum-ceiling units; and it affects walls and windows. It may even have made that luxury, the double window, an economic proposition. The other influence at work is the slight panic we have experienced concerning fire precautions. We will hear more of fire stops and curtains in factories and we hope that the curtain walling people will have found some method of substituting that clumsy expedient the back-up wall to meet the fire hazard between storeys.

materials

Two development associations have provided information on products they will be exhibiting. *The Timber Development Association* stand will contain a timber shell roof similar to that constructed for the Wilton Royal Carpet factory, and a laminated wooden staircase will enable visitors to inspect the construction in detail. Besides these exhibits the association will describe its valuable work in testing, designing, and advising. *The Copper Development Association* will concentrate on the decorative uses of copper and its alloys which will be shown in panels. In addition the use of copper

in domestic water and waste services, and in damp-proofing, will be shown. Of particular interest is the use of small bore copper tube for central heating systems, an example of such a system is on show at the Building Centre and it will be appreciated that the use of small bore tube not only effects considerable economies in the distribution of warmth but provides an installation which is easy to install in existing buildings and neat in final appearance.

William Oliver & Sons Ltd. will exhibit a selection of English wainscot oak available in a useful range of sizes. They will exhibit a number of foreign hardwoods wrot and unwrot together with sample logs of Mahogany, African Walnut, and that extremely useful if initially expensive timber, Iroko.

The last decade has seen the rapid development of products for the preservation of members and components in existing buildings. Necessarily the different parts of any building have differing properties of endurance and the extension of their useful life by the application of preservatives is usually cheaper than frequent replacement. Similarly products and processes for pretreating components which may be short lived have developed. Protim Ltd. will exhibit methods of pretreating timber so that it is resistant to insect and fungal attack, or resistant to fire. Methods of dealing with infected timber in existing buildings will be described and a method of preventing the spread of fungal attack by inserting sticks of concentrated fungicide in damp patches of brickwork or masonry will be shown. Most fungicides have the disadvantage of a strong unpleasant smell but this firm claim to have developed an odourless type of equal efficiency. For locating the damp conditions which are usually associated with fungus attack Protim have developed an instrument called the 'Protimeter'; there are three scales on the instrument, one records the dampness present in timber, another dampness in brickwork or masonry, and a third in plaster. The third scale should be of particular value in determining whether newly plastered surfaces are sufficiently dry for decoration.

Timber decay seems to be very photogenic and the lurid, eye-catching photographs of emaciated timbers together with evil visaged beetles must be the envy of many other exhibitors at the Building Exhibition. Presteure Ltd. will reveal the secret life of the death watch and long horn beetle, of woodworm and the lyctus. Records of tests carried out by the DSIR Forest Products Research Laboratory indicate that Presteure's P.C.L. Dry Rot Solution No. 2 brushed in two applications is effective.

The timber products of a number of firms will go to make up an all-timber stand for Hicksons Timber Impregnation Co. Hicksons' 'Tanalith' preservatives or 'Pyrolith' flame retardant, the latter intended to afford protection to timber against flame spread in addition to decay and insect damage, are applied to all the exhibits. Meriting close inspection will be a laminated timber lamp standard (by Kingston Architectural Craftsmen) and balsa wood ceiling tiles (by Plantation Woods of Lancashire).

Material preservatives either applied as pretreatment or applied to existing structures damaged by corrosion are shown by The Zinc Alloy Rust-Proofing Co. Ltd., who rust proof a variety of standard

building products, by J. H. Sankey & Son Ltd., who manufacture 'Glopane,' and by Secomastic Ltd., who manufacture 'Galvafrid' Both 'Glopane' and 'Galvafrid' are zinc rich solutions which can be applied to metal surfaces to prevent corrosion. These are useful products but it should be remembered that since complete galvanizing cannot be achieved cold, they are not resistant where temperatures exceed 240 deg. F. and should not be used in moist situations where the temperature is likely to exceed 140 deg. F. A special grade of 'Galvafrid,' however, is made which the manufacturers claim may be used in temperatures of to 350 deg. F. provided the conditions are dry.

A number of products for the protection, preservation, decoration and for the easy working of concretes and cements are available. J. H. Sankey & Son Ltd. will exhibit their 'Snowtop,' 'Colourtop,' and 'Metal-top' finishes for concrete, and a sealer for concrete known as 'Sealtop' claimed to be highly resistant to oil staining. Kerner Greenwood & Co. Ltd. will exhibit their well-known 'Pudlo' products and in addition a fire cement known as 'Feusol.' Tretol Ltd. and Expandite Ltd. will show among their other products air-entraining additives, 'Aero-mix' and 'Barra 55' respectively, both of which increase the workability of concrete and increase its resistance to frost attack. Kerner Greenwood, Sealocrete, Tretol Expandite Ltd., and A. A. Byrd & Co. Ltd. will show mortar plasticizers which again increase workability and save cement.

Silicone solutions which are eminently water repellent have developed since the last exhibition, and their effectiveness particularly on porous stonework, brickwork, or rendering has been proved. Inertol Ltd. will show their 'Inertol Plus' and Kerner Greenwood their 'Pudlo' silicone water repellent.

J. H. Sankey & Son manufacture six grades of 'Pyruma' fire cements and some of these products can resist intermittent temperatures of intensities reaching 1,580 deg. C. For other special purposes Semter Ltd. have published a booklet which describes fire resisting cements; 'Latex,' 'Silicate Plastic,' 'Resin,' and 'Sulphur cements.' A useful series of charts is provided at the end of a booklet published by the firm describing the physical and chemical properties and application of each type.

Information available on paints in general is scarce but International Paints Ltd. will exhibit their standard range of colours which include 40 of the British Standard '101' range and 34 of the 'House and Garden' range. They will also introduce their 'Polichrome' multicolour paint which is available in 17 different colour combinations. T. & W. Farmiloe will demonstrate the qualities of their siliconized paints, put on the market since the last exhibition. R. Gay & Co. will also exhibit. For concrete and asbestos surfaces Inertol Ltd., with the observation that 'concrete in the raw is ugly stuff,' will describe the qualities of their concrete paints which are available in a variety of full bodied colours. John Ellis & Co. Ltd. will show their 'Emalux' glazed cement wall finish, their 'Novalux' eggshell finish, used extensively at London Airport, and their 'Dealux' which is suitable for application to smooth concrete and fair faced brickwork.

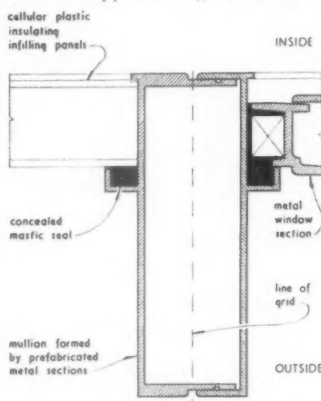
An interesting, useful, and well tried surface treatment for concrete, steel, or masonry structures is

'Pyrok,' a combination of cement, exfoliated vermiculite, plasticizer, and water made by Pyrok Ltd. It is claimed to be weatherproof, have good acoustic and thermal properties particularly against condensation; in addition it is resistant to fire, a 1½-inch cover provides a grade C (two-hour) resistance to steel members, and 'Pyrok' sprayed on to inflammable building boards considerably reduces the measure of flame spread.

A newcomer to the Exhibition is the 'Ersud' South American Minerals and Products Co., who market 'Exolit' firestop, a German-made foam barrier producing a fireproofing compound which it is claimed will reduce flame spread hazards to almost nil by a simple surface coating. Used in the new Jaguar works, the chemical has been under test at the Fire Research Station and copies of the report will be available.

In large structures liable to extensive thermal movement the problems of providing satisfactory expansion joints have, until recently, been met as they arise. This year's Building Exhibition will indicate that much thought has been given to the development of mastics applied with standard equipment, of standard extrusions which can be ironed into place, or of strips which provide continuous coverage. Perhaps the development of these products has been accelerated by the expanding use of curtain wall assemblies which present serious weatherproofing, condensation, and movement difficulties within themselves, and equally serious problems at the points where they connect to the structural assembly of the whole building which almost invariably behaves in a dissimilar way.

Secomastic Ltd. have improved on their application gun, 1, and in



1, use of Secomastic in curtain wall mullion.

addition manufacture a grade of 'Secomastic' which is metallic in colour and is therefore very suitable for use round metal frames. The BB Chemical Co. Ltd., manufacturers of 'Bostik,' have produced a series of systematically laid out information sheets which describe the appearance of each adhesive, its properties, method of application, and the way in which it should be stored and packed. Both these concerns manufacture sealing strips, 'Secostrip' and 'Prestik' respectively.

Expandite Ltd. will exhibit a wide range of jointing and sealing products. Interesting among these are their 'Asbestumen' which can be applied with a trowel, 'Aerolastic' which is a petroleum resistant sealing compound useful for airport runways and garages, and 'RB 200' which is a pre-formed flexible sealer available in a number of standard sections or in sections made to

special order. They also have interesting devices for applying the products, notably a 'Meltu pourer'



2, Expandite Meltu pourer for sealing compounds.

2, for sealing with compounds which require heat control.

sheets and sections

The Linoleum Manufacturers' Association, who are naturally concerned with endurance and appearance of linoleum, will deal extensively with methods of adequately damp-proofing buildings. They will show different grades of linoleum, their colours, and a rather cryptic 'personalized floor.' A booklet published by the Association describes why and where linoleum should be used, and how it should be laid. The Dunlop Rubber Company will exhibit sheet flooring together with tile and studded tile variants, and The Armstrong Cork Co. Ltd. will show two new products—'Plasco,' a hardwearing, quicksetting flooring compound, and Armstrong Linoleum which the firm are once again producing. British Congoleum Ltd. manufacture a sheet patterned to imitate wall tiling.

The industry has been developing a number of different grades of building paper during the last few years, among which the aluminium foil backed types for thermal insulation are of particular value. J. Latter & Co. Ltd. will show their 'Laternax' building paper which is available in several grades with foil applied to one or, in one grade, both faces. In addition to these they will show their extensive range of general purpose papers for sarking and damp-proofing; a very light weight grade for use in temporary structures is of interest.

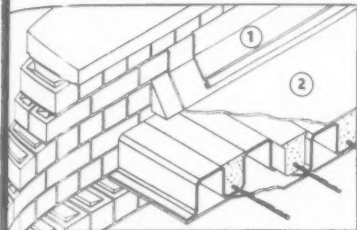
The British Plasterboard (Mfg.) Ltd., Bellrock Gypsum Industries Ltd. and Gyproc Products Ltd. cover the plasterboard field. Bellrock are to manufacture an extruded panel which incorporates its own frame and thus obviates the use of timber in studding and joisting; this product should be on the market next year. Plasterboard with an aluminium foil backing will be on the stand of Gyproc.

Timber veneered and melamine coated cork is shown by Aga Veneers Ltd.; this has an endurable high gloss surface. In addition the firm will exhibit a range of thin paper-backed veneers which are applied to wall surfaces in the same manner as wallpapers and can be french polished. Rolls of 11 yards and 55 yards in length, 19½ inches, 27½ inches, 32½ inches and 49½ inches in width are available.

Roofing materials can be seen at the stand of Nuralite Co. Ltd. who manufacture a useful thermoplastic bitumen-asbestos roof sheet. It can be worked in a manner similar to lead roofing but it should be re-

membered that it cannot be spread out in the same way; shaping therefore should be one directional wherever possible. *The Weatherall Roofing Co.* will show the latest developments in 'Nuralite' roofing techniques on their stand.

The Universal Asbestos Cement Manufacturing Group will exhibit three types of roof decking for flat roofs; Metal Re-inforced Decking, 3,



3, Universal Asbestos metal reinforced decking.

Hollow Insulated Decking and Battened Decking. Particularly interesting but still in need of development are the sandwich constructions which incorporate a 1-inch layer of glass fibre between two sheets of corrugated or troughed sheets. It is the experience of some erectors that these composite panels are not easily handled on site and a number of breakages result. Mention having been made of glass wool, *Fibreglass Ltd.* will exhibit their wide range of mats and quilts, and the use of 'Fibreglass' in air filters.

At the last building exhibition *The Northern Aluminium Co. Ltd.* introduced their Noral 'Snaprib' roof sheeting. In principal each sheet snaps over the rib of the adjoining sheet providing a continuous joint and avoiding the use of fixings which penetrate the sheets and only give point support. Since that time, 'Snaprib' has been used extensively and photographs will show a number of applications.

Ashdowns Ltd., a subsidiary of *Pilkingtons*, manufacture a reinforced fibreglass-polyester sheet called 'Undulite'. This is available in corrugated and flat sheets, in a variety of colours, and in semi-opaque or highly translucent grades. *Allan Blunn Ltd.* will exhibit a gait glass laminate also available in corrugated and flat sheets, this product is manufactured by *Dura-steel Ltd.* who will be showing on their own stand their fire-proof and heat-resistant panels constructed of steel and asbestos.

Expanded metal has many uses in the building industry and the *Expanded Metal Co. Ltd.* will show a number of these applications: as reinforcement for concrete and brickwork, as lathing for plaster work, for fencing and barriers, walkways and cable trays, and in addition anodised variations for decorative purposes.

Little information of developments in tubes and pipes for building purposes has been released to date but *Key Engineering Co. Ltd.*, and *Union Fibre Pipes Ltd.* will exhibit the well-proved application of pitch fibre drainage and sewer pipes. While initially more expensive than salt glazed ware these pipes can be laid without concrete bases and the available lengths make laying operations, where there are long runs with few connexions, speedy and simple. Polythene tubing, used extensively for agricultural and industrial services and now more extensively for cold water and waste services in all types of buildings, will be exhibited in the form of 'Deltathene' manufactured by the *Delta Metal Company* and distributed by *F. H. Bourner & Co. Ltd.*

bricks, blocks, tiles, and other simple building components

It is surprising that the group of products including simple, rather ambiguous components such as bricks, tiles, blocks, items of ironmongery, etc., should remain undeveloped while the industry concentrates on the development of more complex single-purpose, 'take-it-or-leave-it-but-if-you-take-it-you-will-have-to-build-your-house-round-it' assemblies. In this year's exhibition this group of simple components is represented by a selection of tiles, bricks, blocks and run of the mill selection of builder's ironmongery.

The British Plasterboard Mfg. Ltd. manufacture 'Blue Hawk' flooring blocks, a wood surface backed with synthetic resin bonded sand. The tiles are 9 inches by 9 inches and are suitable for laying over floor heating. *The Armstrong Cork Company* have recently formed an acoustic department, the work of which has resulted in an acoustic floor tile and a second acoustic tile called 'Travertone' which is $\frac{3}{4}$ inch thick, available in two sizes, 12 inches by 12 inches and 24 inches by 12 inches, and may be obtained straight- or bevel-edged. These tiles are made of fissured mineral wool which gives a textured surface appearance and they are fire resistant.

Economical types of wood block flooring have been available for some years, they consist of small billets of hardwood bonded to a base of some cheaper material. *Calders Ltd.* will exhibit such a floor known as the 'Alufloor', the tiles are 18 inches by 18 inches backed with aluminium foil, each tile is divided into 16 smaller squares consisting of small hardwood strips.

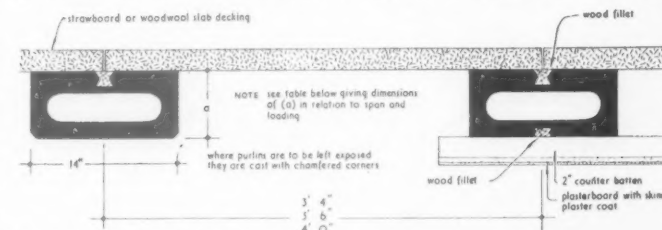
The Marley Tile Company publish a report which summarises the properties of the two main types of thermoplastic flooring, those with an asphalt base and those with a plasticised polyvinyl-chloride base. *Semtex Ltd.* will show a tough rubber ribbed tile measuring 18 inches by 18 inches by $\frac{3}{16}$ inch thickness in addition to their ranges of 'Semastix' thermoplastic tiles, and their 'Vinyflex' and 'Semflex' PVC tiles. Extra hardwearing flooring units known as 'Paviors', 2 inches thick and multicoloured, will be shown by the *Accrington Brick and Tile Company*; and *J. H. Sankey* will show their 'Ceramob' compressed concrete decorative floor in addition to their highly resistant vitrified buff tile. *Ferodo Ltd.* and the *Safety Tread Company* will exhibit their ranges of stair treads and nosings suitable for decorative and hardwearing uses.

Elder Reed & Co. Ltd. will show their terrazzo, marble, and oxychloride jointless flooring, their ceramic glazed and unglazed mosaic, as well as the S.A.I.V.O. vitreous glass mosaic the sample card of which decorates so many architects' offices. *John Ellis & Sons Ltd.* will also exhibit mosaic panels together with their range of granite concrete paving slabs and curbs, concrete flower boxes, and sundry products such as fuel bunkers, bins, and concrete posts. *H. G. Thymne Ltd.* manufacture ceramic tiles either granite glazed, enamel glazed, or eggshell glazed; and in addition to these, will show a selection of hand painted and hand printed tiles, and their range of recessed or built-in ceramic bathroom fittings. *Packard and Ord Ltd.* specialise in hand printed tiles and pottery, among their exhibits will be a number of beer pull handles, which can be made to order to fit existing beer engines. *Ward and Co.* will be exhibiting examples of applied lettering, among

which there are some cast aluminium letters suitable for external use.

Bricks, blocks, and tiles will be shown extensively by the companies and groups who manufacture them. *The South Eastern Tile and Brick Federation*, *The Sussex Brick Group of Companies*, *The London Brick Company* who introduce their 'Heather' and their 'Dapple Light' facing bricks, and *Eastwoods* who will concentrate on bricks, cement and concrete products, and roofing tiles, while reminding us that they are also general merchants for the distribution of building materials. *Redland Tiles Ltd.* and *Colthurst Symons & Co. Ltd.* will show clay

doors available with solid, semi-solid, 'Dufaylite,' and skeleton cores. *Gliksten & Son Ltd.*, makers of well finished veneer faced flush doors among other types, will exhibit their new 'Mark 7' door specially designed for use in schools; it is faced with $\frac{1}{8}$ inch British made Utile ply and cored with 'Glinex' insulating board. *Bryce White & Co. Ltd.*, too, will show a new door called the 'Deseronto' together with a fire door which gives a fire check of half an hour. A pivot door available in standard sizes is manufactured by *Golmet Doors Ltd.*; to facilitate easy fitting these doors are supplied complete with frame and



4, Concrete Ltd's hollow purlin unit.

roofing tiles of various colours and textures. *J. H. Sankey* will exhibit their range of special purpose bricks and blocks including their Blue Vitrified alkali and acid resisting brick, and three types of firebrick.

A number of standard concrete units such as tunnel segments, piles and beams will be shown by *Shockcrete Products Ltd.* *Concrete Ltd.*, the manufacturers of 'Bison' floors, will show their new hollow purlin unit which may be used to carry lightweight roof decking, 4; the planks are made in several depths to suit the particular spans and loadings required.

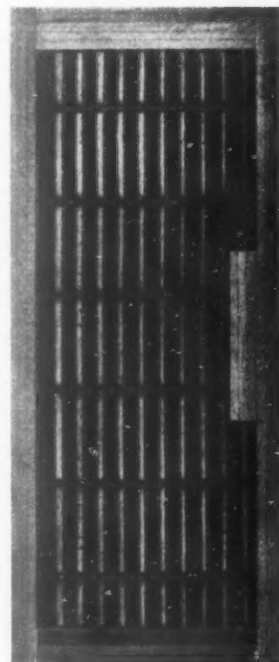
Information to hand on builders' ironmongery is limited but the *Vulcan Manufacturing Co.* will show their selection which includes a monkey tail bolt suitable for lightweight garage doors.

assemblies

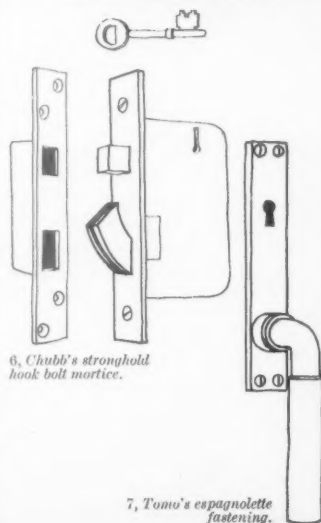
Quicktho (1928) Ltd., who at the last building exhibition showed their 'Windowall' curtain walling, will show aluminium roof lights, dual horizontal sliding windows, and top hung ventilators which can be supplied with remote control gear if required. An improved version of 'Windowall' will also be shown. Another roof light will be shown by *T. W. Ide Ltd.* called the 'Twide' continuous curved roof light; various types of upstands and glass domes are manufactured by this firm and part of their stand will be devoted to the decorative features of coloured glass panels.

The Bolton Gate Company Ltd. manufacture gates of mild steel and aluminium alloys up to 30 feet in length and 200 feet wide, they will be exhibiting their ranges of collapsible doors and gates, power operated and photocell doors, and their 'Glydover' garage doors. Other garage doors will be shown by *Westland Engineers Ltd.* who make the well-known 'Welrise' and 'Wellift' doors and a new packaway door, the 'Welpak' which was exhibited in prototype at the last exhibition but has been modified and improved since. *Boulton and Paul Ltd.* will show their fencing assemblies and their tubular gates, and their ranges of standard red deal joinery which include windows, doors, fencing, and cupboards.

Shapland and Petter Ltd. are manufacturers of office unit furniture, laboratory fittings and Raleigh flush



5, Gliksten's Mark VII flush door.



6, Chubb's stronghold hook bolt mortice.

7, Tomo's espagnolette fastening.

spring loaded gear which is integral. Chubb will be showing a new 'Stronghold' hook bolt mortice lock for use on sliding doors, 6.

Windows will be exhibited by *Frederick Braby & Co. Ltd.* who manufacture high quality steel and aluminium windows, by the *Tomo Trading Company* who market double glazed timber windows fitted with robust espagnolette fastenings, 7. Another double glazed timber window is to be shown by *Esavian Ltd.* together with an Around-the-corner window suitable for showroom use. The splendid 'Carda' window will be shown on the stand of *Holcon Ltd.* Double glazing assemblies should see rapid development and good markets within the next few years; hitherto thermal economics have been in the balance but with the rising price of fuel there is no doubt that the use of double glazing will become more general.

Of the main building assemblies: walls, floors, and roofs, the *Ruberoid Co. Ltd.* manufacture an insulated metal deck roofing system, *William Briggs & Sons* will show their seven types of Bitumetal aluminium decking now available, a special section of their stand will deal with the problem of interstitial condensation so frequently encountered with lightweight metal roofs, and *Cafferata & Co. Ltd.* will show a roof deck formed of the new product 'Pyrocrete,' a gypsum concrete with good thermal and fire resistant properties which can be erected very swiftly. *George Greenwood & Sons* will exhibit the 'Myko' flooring system for suspended floors and roofs; the system consists of concrete box sections suitable for spans up to 17 feet or of prestressed beams which can be used in spans up to 32 feet thus saving extensive secondary support. Lattice steel purlins specially designed for domestic roofing purposes will be shown by *Sommerfelds Ltd.* who claim that considerable time is saved by their use, 8. *Stramit Boards Ltd.* will show applications of their strawboard for roof decking, partitions, and as an infilling to curtain walling. The boards are easily worked and methods of jointing have been carefully devised, particularly useful is the fact that the boards can be obtained in lengths of 12 feet or more if required. This reduces the number of joints and therefore increases thermal efficiency, while reducing the labour in fixing. When used as a roof decking with felt applied immediately on top the boards sometimes suffer through condensation. An assembly of movable wall panels is manufactured by *Internal Constructions Ltd.*, it is called 'Intercon' and may be obtained with PVC coloured and patterned

surface finish. Junctions are formed with black rubber seals and extrusions. A number of acoustic and heated ceiling assemblies have been designed by *Burgess Products Ltd.* whose perforated tiles are now available stove enamelled to any British Standard colour, while *Nexsums* will be exhibiting not only their 'Trofdek' roofing and flooring and their 'Wal-pak' curtain wall but also their new 'Diaframe' lightweight roofing panels.

Before the last Building Exhibition several firms gave details of their curtain walling assemblies, only four such assemblies have been circulated to date for the present Exhibition. It is perhaps significant that this information has been replaced by copious information on flexible sealing compounds and strips. *Frederick Braby*, however, will show their 'Wallstrut' curtain walling, the mullions being aluminium extrusions 4 inches deep. *Gardner Sons & Co. Ltd.* have developed 'Murogard,' a curtain walling assembly which can be hung from within, thus obviating the need for staging. The manufacturers claim that the assembly has a two-hour fire grading. *Quick-tho's* 'Windowall' claims to have overcome a number of condensation problems and to have an improved eil detail.

With porcelain enamelled steel playing an ever-increasing part in building, particularly as a curtain wall infill panel, a worthwhile visit can be made to the gallery stand of *Stewart & Gray Ltd.*, whose colourful 'Eseol' panels have now been in use some time in atomic establishments and elsewhere. An unlimited variety of non-fading colours can be applied to the outer panel face of sheet steel, and the various types of inner core insulation will be shown, together with much useful technical information.

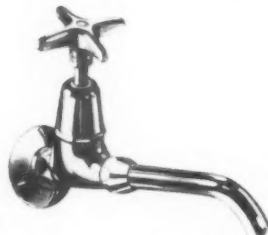
Special equipment associated with doors and windows is to be shown by *Ellard Sliding Door Gear Ltd.* who manufacture sliding door gear for all sizes of door. *Teleflex Products Ltd.* add a new assembly to their $\frac{3}{8}$ inch and $\frac{1}{2}$ inch cable remote control gear for windows, this is 'Neatagear' using $\frac{1}{8}$ -inch cable, 9. It is suitable for the control of single top hung and centre pivoted windows, the square section cable conduit fits tidily into the window frame. The *Unique Balance Co. Ltd.* manufacture the 'Unique' spiral sash balance, three types are made to cover the ranges of sashes weighing up to 90 lb. A new 'M' type will be exhibited which is intended for ships windows in the 90-lb. class. A concealed curtain track called 'Silent Gliss' and manufactured by *Silent Gliss Ltd.* will be shown; nylon



9, Neatagear remote-control window.

gliders to which curtains may be attached direct or by means of hooks, runners or eyes, run in aluminium runners. Twenty different profiles of rail are available, fixing is by means of special tools but care should be taken not to distort the runner section or the 'Silent Gliss' will neither be silent nor will it gliss. *J. Avery & Co. Ltd.* are exhibiting their standard ranges of 'Sun-minium' venetian blinds, 'Super C' dark blinds, 'Welfold' folding doors covered with PVC coated leather cloth, and their 'Fanpleat' pleated blinds of washable holland.

In the field of water and waste services *Sambra Ltd.* together with the associated company of *Conc-Terna Ltd.* will show their 'Easiline' raised nose pillar cocks, 10, and a



10, Barking Brassware's projecting bibcock.

selection of copper traps, waste fittings, stack units, pipe connectors, gate valves, and a newly introduced radiator valve.

Barking Brassware Co. Ltd. will be showing the full range of their admirably-conceived 'Hiflo' fittings, including three new designs, all with inclined headparts. The bibcock '64' type, has an adjustable nozzle developed at the suggestion of architects, the '65' is intended for kitchen sinks and the '107A' bath tap for recessed fittings.

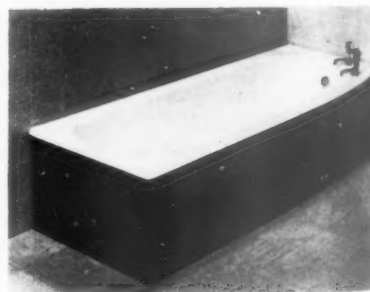
Of certain interest on the stand of *Econa Modern Products Ltd.* will be a 4-inch soil stack taken from the firm's laboratory, rigged up to reproduce, in a few moments, suction effects many times greater than that experienced in the tallest point block flats, and used to test the effect on various types of trap.



11, Easiline 'raised nose' pillar cock.

Kitchen equipment will be shown by *Ezee Kitchens Ltd.*, *Redwing Ltd.*, and *Leisure Kitchen Equipment Ltd.* A new feature of the 'Ezee' kitchen is a built-in mechanism which brings down the top shelf to the user's height. They also show sink units incorporating either a *Hoover* washing machine or the new 'Ezeemall' dish washer. The *Redwing Ltd.* 'Silverwing' units are provided with legs to keep the cabinets clear of skirting boards and pipes, the drawer and shelf combinations of these cabinets can be varied to choice. A new *Leisure* sink unit incorporating the 'Culsynk,' designed for kitchenettes and only 36 inches in length, is to be shown.

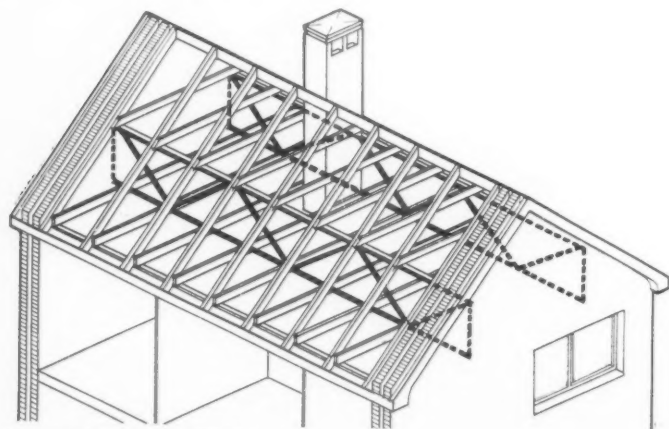
The special exhibition 'theme' this year is the 'History of the British Bathroom and W.C.,' and the organizers hope to present a complete picture, from the Roman baths to the latest developments in pre-fabricated bathrooms. Obviously a good subject for the showman's touch. A search has been going on for historical fittings and the results may even reconcile one to the appearance of some of the present-day ware. In recent years better designed objects following the curvilinear *Adam* forms or the nice balance of rectangle and curve achieved by *John Knodes*, have appeared. *Shanks* will show their new 'Parva' bath of normal plan size but only 1 ft. 3 in. deep, their close coupled 'Enmore' closet set, and by way of special equipment an eye wash fountain, hairwashing equipment, and a babies' bottle washing unit in stainless steel. *Leeds Fireclay Ltd.* will also show hairdressing equipment, a close coupled vitreous china closet set, and a new wash hand basin. *Radiation Group Sales* and *Allied Ironfounders Ltd.* will exhibit new baths, the former called the 'Cygnat' provides a choice of three tap positions and is available in 18 different shades, 12.



12, Allied Ironfounders' 'Cygnat' bath.

The latter, called 'Caprice,' is a space-saver combining all the functions of a shower, tray, and sitting bath, ideal for children, and it can be installed where there is insufficient space for a full length bath. *Steel Radiators Ltd.* hope to exhibit a new type of heating battery for convector installations.

A rapidly moving section of the industry is domestic heating and many products will be on view. *Ascot Gas Water Heaters Ltd.* will exhibit the new totally enclosed balanced flue water heater which has been sponsored by the Gas Council. The new 'Se-duct' to be shown is a centrally situated duct which enables



8, Sommerfeld's lattice steel purlins.



This modern, attractive, 4-bedroomed house is the home of Mr. C. R. Lindsey, member of C. H. Lindsey and Son Ltd., a leading firm of Heating Engineers. The central heating system is oil-fired, with fuel supplied by Shell-Mex and B.P. Ltd.

Heating engineer chooses oil-fired heating for his own home

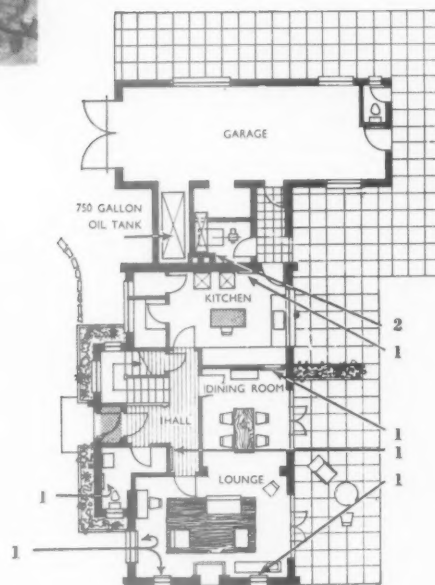
'KINGSDOWN', Gallows Green, near Colchester, owned by Mr. C. R. Lindsey, stands on land which was used as a burial ground during the Great Plague, when it was known as 'The Great Orchard'. A gallows at one time stood on the common land in front of the house.

Mr. Lindsey is an expert in house heating. He was careful to install the most efficient form of heating he knew - oil-fired heating. Central heating and hot water at 'Kingsdown' are provided by an oil-fired boiler using fuel stored in a 750-gallon tank. His expert knowledge is also responsible for refinements in the choice of radiators; for instance, the radiator in the hall backs on the part of the cloakroom where the coats are hung up, providing a gentle warmth to dry wet raincoats.

Oil-fired heating is clean, labour-saving, and economical. Automatic controls can ensure steady, even warmth and ample hot water whenever it is wanted. There is no fuel to carry, no stoking to be done and no ash or clinker to clear away.

Boiler and burner manufacturers have now produced oil-fired units for every need, from hot water supply in the smaller home to full central heating in the large country house. Shell Domestic Fuel Oil is used for the larger installations and BP Domesticol has been specially developed for smaller boilers with vaporising burners.

If you are designing or modifying almost any kind of building, public or private, you may well find it worth your while to make provision for this modern, efficient heating method. To find out more about oil-fired heating write for a copy of 'Oil Fuel at Home' to Shell-Mex and B.P. Ltd., Fuel Oil Dept. D6J, Shell-Mex House, Strand, London, W.C.2.

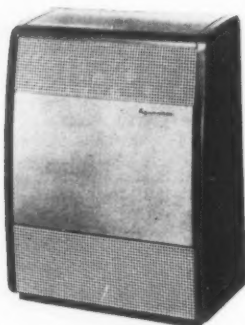


1. Dunham convector type radiator
2. Boiler room



continued from page 356]

several balanced flue appliances to be jointly exhausted. *Radiation Group Sales* will show their large range of slow burning equipment and *Allied Ironfounders* manufacture the 'Rayburn Room Heater' and 'Panda' stove now fitted with thermostatic control. Both these firms have a new large assembly to show. *Radiation* the 'Heatmaster' which provides heat for cooking, domestic hot water, and spaceheating; cooking heat is thermostatically controlled and either coal or coke may be burnt. *Allied Ironfounders* have developed a compact and simple 'Rayburn' oil-fired boiler of the vapourizing pot type. Other solid fuel appliances will be exhibited by *Hattersly Bros.*, *Newton Chambers*, and of course *Aga Heat Ltd.* who will show the new 'Aga de luxe CB' and the 'Luxury Aga E' both of which are available in colour; in addition three new versions of the 'Agavector,' 12, the wall model, the kitchen model, and the cabinet

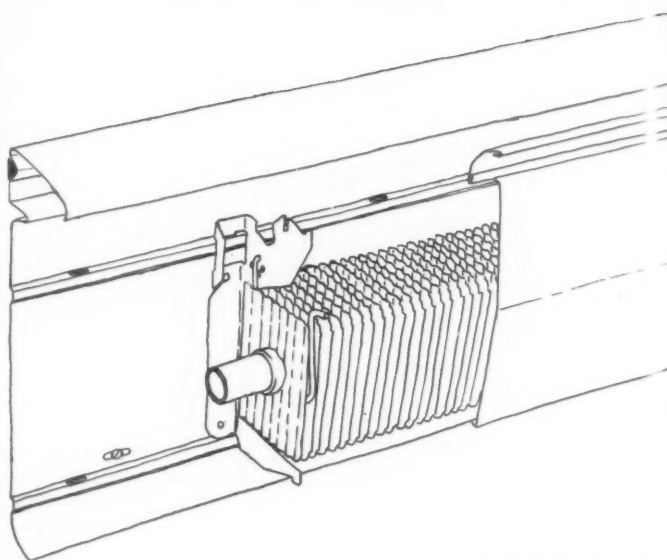


13, Agavector convection heater.

model, which can be placed some distance from the boiler, will be on view. Electrical heaters exhibited will include the 'Ekeo' 2 Kw convector manufactured by *E. K. Cole Ltd.* and a new infra red heater for industrial use by *Dimplex Ltd.* which will be available in October. Hot water and steam heating equipment will include the range of column and wall mounted steel radiators made by *Steel Radiators Ltd.*; *Dimplex* copper radiators, and the range of heating equipment manufactured by *Copperad Ltd.*, particularly interesting among this equipment are the radiant assemblies, 'Raystrip,' 'Wallstrip,' 12, and the flat radiant heating panels. *Watts Automatic Boilers* will show two solid fuel and two oil-fired boilers, the 45a model solid fuel burns anthracite grains and is rated at 45,000 btu, the '275e' burns small coke gravity fed and is rated at 275,000 btu. One of the oil boilers is a conversion, the '170' fitted with a pressure jet burner, the other is a purpose made oil unit, the '70w.' *Robert Taylor & Co.* introduce a 40,000 btu version of the popular 'Tayco Royal' model. A smaller oil-fired vapourizing pot boiler rated at 25,000 btu is to be exhibited by *S. Smith & Sons Ltd.*

plant

Plant for general building purposes and special processes associated with building has developed rapidly, it is only to be regretted that much of the equipment usually exhibited is not in more general and widespread use. Examples of equipment to be exhibited include the 'Cowley Level'



14, Wallstrip skirting heater.

and 'Site-Square' manufactured by *Hilger & Watts Ltd.* The authors' Cowley level is in constant use, its operation is rapid, it is accurate within the context of building sites, the purpose for which it is intended, and every contractor should possess one of these thereby saving many man-hours a week. Of more specialized character *PSC Equipment Ltd.* will exhibit the latest type of 12-wire Freyssinet prestressing jack and a new range of light-weight jacks

for stressing wires singly. The prestressed concrete division of *Cable Covers Ltd.* will describe the 'CCL Udall Lintol' method of underpinning structures and they will introduce the Swedish 'Interconsult' system of sliding shuttering for concrete. The control of dust is important in the manufacture of many building components. *Dallow Lambert & Co. Ltd.* manufacture pneumatic dust collecting equipment which will be shown on their stand.

[List of contractors on page 360]



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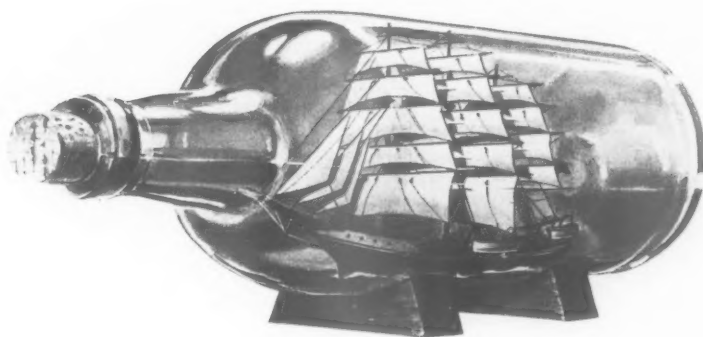
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BRISTOL: 31 Lawrence Hill, Bristol, 5. Bristol 58440
MANCHESTER: 14 Cathedral Street, Corn Exchange Buildings, Manchester. Blackfriars 5778
GLASGOW: 136 Renfield Street, Glasgow, C.2. Douglas 0444

CONTRACTORS etc

PAPER MILL AT NORTHFLEET. Architects: Farmer & Dark.

Tissue Mill. Precast reinforced concrete frame designed by A. E. Beer. **Landscaping:** Brenda Colvin. **General contractors:** Holland & Hannen & Cubitts Ltd. **Sub-contractors:** Patent glazing: W. H. Heywood & Co. **Aluminium sheeting:** Carter Horseley (Engineers) Ltd. **Roofing:** Wm. Briggs & Sons. **Goods lift:** Wm. Wadsworth & Sons. **Loading bays gate:** Potter Rax Ltd. **Suspended ceiling and wall linings (machine house):** Structural Insulation Ltd. **Travelling cranes for window cleaning boats:** Palmers Travelling Cradle & Scaffold Co. **Foreman's office, laboratory-machine house and office block curtain walling:** Morris Singer Co. **Steel staircases and stair balustrading:** S. W. Farmer & Son. **In situ flooring (machine house):** Grano Metallic Paving & Plastering Co. **Rainwater goods:** Wiggins Sankey Ltd. **Sanitary fittings:** Adamsez Ltd. **Fire resisting doors:** Haskins Ltd. **Stoneclad metal panels over office block roof:** Mathews Refractories Ltd. **Alto plastic flooring, concrete stairs and conversion area:** Adamite Co. **Incinerators:** The Hygienette Manufacturing Co. **Internal aluminium cills:** Builders Iron & Zinework Ltd. **Door furniture:** Alfred G. Roberts Ltd. **Glazed wall tiling:** Dennis M. Williams Ltd. **In situ terrazzo flooring and lavatory partitions:** Roman Mosaic

Ltd. **In situ ceiling (office block):** Expanded Metal Co. **Cork floor tiling (office block):** E. J. Elgood Ltd. **Wood block flooring (office block):** Hollis Bros. **Flush doors:** D. Burkle & Son. **Fibrous plaster ceiling panels (office block):** Plaster Decoration Co. **Office block rooflights:** W. H. Heywood & Co. **Wall finishes:** Robb's Cement Enamel Finishes Ltd. **Lavatory waste fittings:** Econa Modern Products Ltd. **Slate cills:** John Williams (Rotherhithe) Co. **Metal louvre lay-lights (office block):** Courtney Pope (Electrical) Ltd. **Glazing generally except patent glazing:** E. Pollard & Co. **Strong room door:** Chubb & Son Lock & Safe Co. **Concrete and mosaic cladding (office block):** Malacarp Terrazzo Ltd. **Water supply services:** Engineering Services Installations Ltd. **Laboratory furniture:** Griffin & George Ltd. **Clothes lockers:** W. B. Bawn & Co. **Tea room equipment:** Benham & Sons. **Escape staircase:** Allen & Greaves Ltd. **Steel partitioning:** Roneo Ltd. **Boxcater sign lettering:** London Signs & Illumination Ltd. **Foreman's suspended office:** Hawksley S.M.D. Ltd. **Sprinkler systems, heating and hot water supply:** Norris Warming Co. **Electrical services:** Tanjon Ltd. **Extract fans:** Sturtevant Engineering Co. **Bricks (purple Cambridge flints, No. 92):** Uxbridge Flint Brick Co.

Engineering Division and Central Research Laboratory. **General contractors:** Holland & Hannen & Cubitts Ltd. **Sub-contractors:** Steel: Sommerfelds Ltd. **Rooflights:** W. H. Heywood & Co. **Venetian blinds:** J. Avery & Co. **Partitions:** Holoplast Ltd. **Acoustic ceiling panels:**

Burgess Products Co. **Stoneclad steel spandrels:** Mathews Refractories Ltd. **Map mural:** Bakelite Ltd. **Planting and grassing:** Gilliam & Co. **Window wall:** The Morris Singer Co. **Furniture:** Hille of London Ltd. **Carpets:** Heals Contracts Ltd. **Bollard lights:** Frederick Thomas & Co. **Conditioned laboratory insulation:** Onazote Insulation Co. **Fireproof doors:** Dreadnought Fireproof Doors Ltd. **Glazed wall tiling and quarry tile:** Dennis M. Williams Ltd. **Illuminated ceilings (drawing office):** Lumenated Ceilings Ltd. **Cork tile flooring:** E. J. Elgood Ltd. **Wood block flooring:** The Acme Flooring & Paving Co. **Tiled mural panel:** Carter & Co. (London). **Ironmongery:** Alfred G. Roberts Ltd. **Flush doors:** Saro Laminated Wood Products Ltd. **Furniture to laboratories:** Cygnet Joinery Ltd. **Fire alarms:** Associated Fire Alarms Ltd. **Terrazzo and precast concrete wall slabs:** Malacarp Terrazzo Co. **Studded rubber tiles:** Semtex Ltd. **Veneered blockboard panels:** Wm. Mallinson & Son. **'Elkington Gatic' duct covers:** The Dover Engineering Works Ltd. **Balustrading:** Adrian Stokes Ltd. **Fibrous plaster:** Claridges (Putney) Ltd. **Roofing:** Wm. Briggs & Sons. **Precast floors:** George Greenwood & Sons. **Heating laboratory services, Plenum plant and air conditioning:** Norris Warming Co. **Light louvres:** Courtney Pope (Electrical) Ltd. **Slate:** Bow Slate & Enamel Co. **Lift:** Pickering Ltd. **Piling:** West's Piling & Construction Co. **Electrical installation:** Tanjon Ltd.

Transport Department. **Quantity surveyors:** E. C. Harris & Partners. **General contractors:** Higgs & Hill Ltd. **Sub-contractors:** Patent glazing: Wil-

liams & Williams Ltd. **Dome lights:** S. W. Warner & Son. **Roofing:** Field & Palmer Ltd. **Cladding:** Carter Horseley (Engrs). **Steelwork:** S. W. Farmer & Son. **Cycle stands:** Leis Tube Co. **Partitioning:** Rowe Bros. (Liverpool). **Venesta Ltd. Bell rack partitioning:** J. W. French Ltd. **Platform:** Fisher & Ladlow Ltd. **Sanitary fittings:** Adamsez Ltd. **Granolithic flooring:** The Grano Metallic Flooring & Concrete Co. **Tiling:** Parkinson Ltd. **Lockers:** Constructors Ltd. **Plumbing:** J. Martin (Brockley) Ltd. **Cold cement glaze:** Robbs Cement Enamel Finishes Ltd. **Gates:** Bayliss, Jones & Bayliss. **Door furniture:** Nettlefold & Moser Ltd. **Shutter doors:** Potter Rax Ltd. **Plastic flooring:** Marley Tile Co. **Limpet asbestos:** Turners Asbestos Co. **Paints:** Vitreflex Ltd. **Blinds:** J. Avery & Co.

Power Plant Extension. **General contractors:** Higgs & Hill. **Roofing sub-contractors:** Wm. Briggs & Sons. **Glazing sub-contractors:** W. H. Heywood & Co. **Sheeting sub-contractors:** Carter-Horseley (Engineers) Ltd. **Paint:** Leyland Paint & Varnish Co.

Water Tower. **Quantity surveyors:** E. C. Harris & Partners. **General contractors:** Bierrum & Partners Ltd. **Sub-contractors:** Cladding: Williams & Williams Ltd. **Signs:** Franco-British Electrical Co. **Staircase:** Fredk. Braby & Co. **Ceilings:** Turners Asbestos Cement Co. **Floors:** Marley Tile Co. **Cement glaze:** Robb's Cement Enamel Finishes Ltd. **Doors:** Walter Lawrence Ltd. **Door furniture:** Nettlefold & Moser Ltd. **Sanitary ware:** Adamsez Ltd. **Venetian blinds:** J. Avery & Co. **Partitioning:** Rowe Bros. & Co. **Pipework:** William Press

[continued on page 362]

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continued from page 360

& Co. *Lighting and heating:* Tanjon (N/C) Ltd. *Plumbing:* J. Martin (Brockley) Ltd.

Other Sub-Contractors. *Manhole covers:* Broads Manufacturing Co. *Sanitary fittings:* Stitson Sanitary Fittings Ltd. *Ironmongery:* Alfred G. Roberts Ltd. *Piling:* Soil Mechanics Ltd. *Structural steelwork:* Redpath, Brown & Co. *Roof ventilation:* Colt Ventilation Ltd. *Handrailing:* Power Utilities Ltd. *Steel staircases:* F. A. Norris & Co. *Shutter gates:* Potter Rax Ltd.

University and Polytechnic, Rangoon. *Architects:* Raglan Squire & Partners. *General contractors:* Taylor Woodrow Construction Ltd.; United Burmese Engrs. Ltd., Rangoon. *Sub-contractors:* *Ironmongers:* G. & S. Allgood. *Marble:* Anselm Odling & Sons. *Lighting fittings:* Falk Stadelmann & Co. *Electrical installations:* General Electric Co. *Paint:* Goodlass Wall & Co. *Insulation boards:* Stramit Building Boards Ltd. *Sliding doors:* E. Hill Aldam & Co. *Metal windows:* Ideal Casements (Reading) Ltd. *Synthetic resin:* Leicester Lovell & Co. *Lifts:* Marryat & Scott Ltd. *Glass laminators:* Plyglass Ltd. *Shopfitters:* E. Pollard & Co. *Mineral insulated cables:* Pyrotenax Ltd. *Tubular scaffolding:* Raylor Bros. *Joinery:* Fredk. Sage & Co. *Other Sub-contractors:* Siemens Bros. & Co.; Thorn & Huddle Ltd.; Worthington-Simpson Ltd.; Fredk. Braby & Co.; British Thomson-Houston Export Co.; Chee-col Processes Ltd.; The English Electrical Co.; The Ruberoid Co.

School at Sheffield. *Architects:* Gollins, Melvin, Ward & Partners, in

association with the City Architect. *Contractors:* Charles E. Roberts & Co. *Sub-contractors and nominated suppliers:* *Mechanical services:* Electrical services (caretaker's house): W. Richardson & Co. *Structural steelwork:* Banister, Walton & Co. *Reinforced concrete:* Twisted Reinforcement Ltd.; Fawcett Construction Co. *Asphalte:* Asphaltic (London) Ltd. *Felt roofing and decking:* D. Anderson & Son. *Metal windows, patent glazing presses, metal door frames and screens:* Henry Hope & Sons. *Timber doors:* F. Hills & Sons. *Terrazzo pavings and partitions:* Malacarp Terrazzo Co. *Cloakroom fittings:* Neville Watts & Co. *Sanitary fittings:* John Bolding & Sons. *Sliding folding partitions:* Esavian Ltd. *Glass dome lights:* J. A. King & Co. *Laboratory fittings:* Educational Supply Assn. *Lighting conductor installation:* R. C. Cutting & Co. *Fire equipment:* John Morris & Sons. *Roller shutters:* Shutter Contractors Ltd. *Suspended ceilings:* W. H. Colt (London) Ltd.; Claridges (Putney) Ltd. *Severy lining:* George M. Hammer & Co. *Gymnasium equipment:* H. Hunt & Son. *Thermoplastic floor tiles, wood block and strip flooring:* Hollis Bros. Ltd. *Concrete floor tiles:* Harradine, Rouse & Co. *Glazed wall finish:* Cement Glaze Ltd. *Balustrading, handrails and ironmongery:* Mountford Bros. Ltd. *Blinds and curtain track:* Tidmarsh & Sons. *Smoke check doors and frames:* James Prepared Joinery Ltd. *Expanding ladder:* Loft Ladders Ltd. *Main gates:* A. J. Binns Ltd. *Paint:* Jensen & Nicholson Ltd. *Bricks:* Proctor & Lavender Ltd.

Offices at Shell Haven Refinery. *Architects:* Howard V. Lobb & Partners. *Gen-*

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